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Reducing the Costs of Distribution

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THE recent emphasis on problems of distribution is a corollary of the increased complexity of our productive system. Distribution may be defined as the process of transferring goods from factory or farmyard to the ultimate consumer. An economist would say that production creates "form-utility"; distribution, "time-utility" and "place-utility." The producer creates something which people want; the distributor conveys it to the people who want it, at the time when they want it.

Until very recently, production has been the dominant problem. In the beginning of civilization every man was his own producer, and there was no distribution problem. The division of labor, whereby one man raised cattle, another made shoes, and a third milled flour, increased productive efficiency, and at the same time made necessary a system of distribution so that all three could have beefsteak, shoes, and bread. Yet the principal problem lay in producing enough of these commodities to satisfy those who wanted them. There had generally existed a "seller's market."

The improvement of the mechanics of production; the transition from handicraft to shop, from shop to modern factory, has been a succession of steps toward specialization and centralization of industry. In the beginning we were a people of few wants, rather indifferently supplied. As those few wants were better satisfied, there was time to discover new wants, and the clamor for "more production" continued. In response, better machinery was invented; labor grew more efficient; research discovered new methods; better plans of organization were evolved.

Distribution lagged behind in the rapid advance of productive efficiency. As a general rule whatever was made could be sold profitably. Distribution therefore often proceeded by devious channels established by chance and perhaps long since rendered obsolete. It was inevitable that eventually the backwash from a clogged distribution system should slow down the wheels of production. The Great War played its part with its accompaniment of improved organization methods and new mechanical equipment. The war period probably marks the turning point from seller's market to buyer's market. For the first time there was capacity to produce more goods than people could consume.

The goal of every manufacturer is to operate his factory at somewhere near its capacity. Most manufacturing industries carry a heavy load of overhead, and capacity production, on a profitable basis, is the surest road to dividends. But no business can long produce more than it can sell. The easiest way to increase sales volume, as every business man knows, is to cut prices. To decrease prices and still operate profitably means that lower costs are necessary.

When the "buyer's market" came into being, every effort was made to cut production costs. Labor was speeded up; improved methods were installed; new and efficient factories were built to obtain the advantages of "mass production." In general, the greater the volume of production, the less is the cost per unit; but, also, the more difficult is the problem of distribution. In many cases a high distribution cost acts as a bar to maximum volume. It minimizes the

[1]The Committee on Awards: E. E. Ames, Vice-President and Director of Sales, General Box Company; Dr. Donald Cowan, Commercial Research Department, Swift and Company; Dr. Fred E. Clark, Professor of Marketing, Northwestern University, President, National Association of Teachers of Marketing & Advertising, Chairman.

effect of production economies. If half of the consumer's dollar goes for production and half for distribution, a ten per cent reduction in costs of production means only a five per cent reduction to the consumer. A price-cut due to reduced distribution costs is just as potent in increase of sales volume as a cut due to production economies; and in the present state of industry it is much easier to effect.

"Cost of distribution" is a term which is often loosely employed. Just what are the elements which constitute it? Obviously, every item of cost between the completed product on the floor of the factory shipping room and the consumer's hands is a part of the total. There are the costs of physical distribution; wrapping, packaging, freight charges, warehousing, and trucking. Then there is the separate class of selling costs; salesmen's salaries and commissions, traveling expenses, sales executives' salaries, office expense, and advertising expense. There is in addition a third class of distribution costs which is of a functional nature, and incidental to certain systems of distribution. This includes such items as jobbers' and brokers' commissions and profits.

The greatest reason for high distribution costs is the fact, already mentioned, that increasing specialization of industry brings as a consequence an increasing complexity of distribution. As the one is simplified the other becomes more complicated. This, of course, is inherent in our industrial system. On the whole, the advantages of our productive system far outweigh the difficulties it causes. There is, however, a point of balance, beyond which an increase in the centralization of industry leads to a disproportionate increase in distribution costs. Many large industries are now following a policy of decentralization, establishing branch plants or subsidiaries where it is possible in this way to distribute more efficiently or at lower cost.

A great obstacle to the remedying of high distribution costs is the very indefiniteness of the problem. It is impossible to weigh and measure the factors involved with the precision afforded by production problems. Physical distribution, exemplified by such items as freight rates, warehouse charges, and the like, is susceptible of control; but there is no easy way to hold a stop-watch on a salesman. Even the establishment of quotas presents a study in intangibles.

Indefiniteness does not excuse the many inefficiencies of distribution. There is the house that sends salesmen into their territories with a wish, a prayer and a sample case. Too often a manufacturer who pays his jobbers a fat commission sends out his own crews of salesmen to do the work, and, in effect, pays the same bill twice. There is the man who insists upon nationwide distribution, when he could sell his entire production within a hundred miles of his factory. Some textile mills in New England entrust their sales to agents who handle several competitive lines. There still survive, somehow, the concerns which never ship orders on time, or correctly; and some of the firms which will give credit to any Tom, Dick and Harry who will buy a bill of goods. One of the worst offenders is the man who advertises in a certain medium because "Jones does it." It is one of the most remarkable facts of American business history that so many concerns indulging in similar inefficient practices have been able to cheat the bankruptcy court. It demonstrates as nothing else could, how little attention American business in general has been forced to pay distribution problems.

In many instances the high cost of distribution is chargeable to an insatiable demand for volume of business. This leads in many cases to intensive "high-pressure" methods, with crews of canvassers, unwarranted advertising appropriations, and the other trappings of "business at any price." The craze for volume may be due in part to the pressure of accumulated savings seeking investment; which makes it easy to find capital for plant extensions and for new ventures. Even a small increase in real wages brings about a large increase in the margin between the subsistence level and income. Actual living expenses, such as rent, food, and clothing, show only a moderate increase. Expenditures for luxuries and semi-luxuries, like automobiles, electric refrigerators, radio sets, increase very considerably. Savings also show a large increase quite disproportionate to the increase in real wages. Accumulated savings directly, or indirectly, seek investment in productive enterprise. Thus the practice of saving exerts on the one hand a pressure toward increased production, while on the other hand it diminishes the funds available for purchase of consumer's goods. Messrs. Foster and Catchings have developed this thesis, in "Business without a Buyer," to a conclusion which is perhaps a little extreme. Nevertheless, the effect of easy money in fostering over-expansion is apparent in many industries. Over-expansion means a scramble for markets, and in many cases a high marketing cost as well as low or non-existent profits.

Although distribution costs include many intangibles, there is no reason why the same principles which have been so successful in the production field cannot be applied to their reduction. The mechanics, of course, must be different. In the automobile industry it is hardly possible to have a conveyor belt bring a prospect to the end of the assembly line as each finished car comes off, entrancing though the picture may be to motor executives. Much can be done, however, as the General Motors Corporation has demonstrated by its truly remarkable results in coordinating shipments and sales.

The road to lower costs, in distribution as in production, is a thorough-going analysis of all the factors contributing to the problem. The fundamental requisite is a real comprehension of economic principles, not as textbook rules, but as forces which

operate as inexorably as chemical laws. It is surprising to see how little some business men concern themselves with economic laws. Perhaps it is because they are so seldom demonstrated in a tangible, clear-cut manner. An advertising man recently remarked that the law of supply and demand had been repealed; that any amount of any product could be sold, given a sufficiently large advertising appropriation. He expressed a very common misconception. The "law of supply and demand" does operate. Supply and demand are not static; they are both in a continuously dynamic state. At any given time, a definite quantity of any commodity can be sold at a given price. Advertising, changes in customs or fashions, or seasonal changes, all affect the quantity salable at a price from day to day.

The demand for most commodities is elastic; that is, it can be increased by reductions in price, or by increased selling efforts. The California walnut growers disposed of a phenomenal crop in 1927 by the combined expedients of lower prices and an advertising campaign. The elasticity of demand for a commodity may be represented by a cone, divided into horizontal segments. The broad, base segment represents the consumption at the minimum price; and the narrow tip represents the consumption at the highest price possible to obtain. An absolutely inelastic demand, as in the case of coffins, is represented by a cylinder. A highly elastic market, where consumption varies greatly with small changes in price, is represented by a shallow cone with broad base. Some such conception of the nature of markets is essential in order that proper methods may be applied in each case.

Efficient distribution is a science of measurement of intangibles. "Know your market" is the first and greatest commandment. Many an industry has caused itself severe pains by attempting to crowd ten millions worth of product into a five million dollar market. The newsprint industry offers a beautiful example. There are dozens of others. Call it a "saturation point" or what you will, there is a limit to the amount of any commodity which can be sold profitably at a given time. As that point is approached the economic law of "diminishing returns" begins to operate. Increased volume is obtained only at a constantly increasing cost per unit. Your salesman is getting down closer and closer to the marginal consumer; prospects are scarcer and harder to sell; and costs of distribution creep upward. Suppose a concern with a monopoly in its field has a million prospects. By strong and well-planned sales efforts it has sold half of them. The sales manager figures that two and two make four, and that if he sends out twice as many salesmen, and doubles the advertising appropriation, he can sell the other half million prospects. But the easily sold prospects are out of the market, and those which are being worked on are harder to convince. With twice the selling cost, the volume of sales is increased perhaps fifty per cent. More business is being done, but the distribution costs have increased more than proportionately.

Often statistics are available which make it possible to measure very closely the total market for a commodity. In other cases it is necessary to resort to estimates. That is no reason for abandoning the analysis; a guess is better than blank ignorance. Once the total market for the commodity is known, or estimated, the individual firm's place in the market is determined. Here, at least, is something concrete and measurable.

Then comes evaluation of competition. What competitors are expending, and how will the market absorb the added production? What outside forces are at work to increase or decrease the total consumption of the commodity? Having determined the size of the market, and the slice which competitors will probably get, it is possible to set a reasonable quota for the individual company. This can be checked with records of past sales.

Then comes the question of distribution cost. This requires thorough analysis in what lines are we in the zone of "diminishing returns?" Perhaps there are sizes or styles of product which are unduly expensive to sell. Cut them out! Perhaps sales made within a radius of a hundred miles cost much less per unit than those made at greater distances. Very well, let us increase our efforts in the hundred-mile zone and try to increase the percentage of our sales made there. Perhaps sales through department stores show a lower cost per unit than sales through small retailers. Can a greater proportion of our production be sold through department stores? Perhaps advertisements in newspapers show better returns than those in magazines. Then increase the proportion of newspaper advertising. Perhaps those salesmen who use cars show lower selling cost per unit than those who travel by train. The question of providing cars for all salesmen becomes pertinent.

It is an old and trite saying that "Knowledge is power." In business today knowledge is life itself. Before costs can be reduced they must be known, if only to determine whether the measures taken for reduction are successful. Before quotas can be set and salesmen routed intelligently, the extent of the market must be known, not only as a whole, but in individual districts. Before a large advertising campaign can be launched with certitude of success, the efficiencies of different media must be known.

"Market research" and "market analysis" are terms usually given the functions of determining such facts. They are often abused, like many another newly popular designation; "psychology," for example. There is plenty of quackery in market research. It is a vital function, however. An efficient department devoted to the study of distribution questions, whether consisting of part of the time of one of the executives or the exclusive services of a

score of experts, can be of the greatest aid in holding down distribution costs. Only by thoroughgoing analysis of both product and market can an efficient distribution policy be built.

Business success today lies in producing what people will buy; not in making what you want to make and then bending every effort to sell it. This is a truth which has not percolated into the minds of many executives. Others accept it in theory and ignore it in practice. Failure to recognize this fact keeps the distribution costs of many products sky-high. "You can fool all of the people some of the time, and some of the people all of the time"; but fooling the public is an expensive business at best. It is far simpler and easier to learn what people want and give it to them, than to guess wrong and have to cram the mistake down the public throat. Here is one opportunity for a market analysis function. The consumer's preferences can be studied and the product so fitted as to reduce the selling pressure required, and hence decreased the cost per unit.

The public's ability to buy is the next point for investigation. Obviously, a man with a goodly cash surplus is a better prospect than another who is struggling on the verge of bankruptcy. By utilizing available statistics, a market analysis department can determine which geographical areas and which economic classes afford the best sales possibilities, and so furnish a guide to the efficient distribution of sales effort.

The sales records of past years, if at all properly kept, offer a rich field for exhuming constructive ideas. They should show what channels of distribution have been most efficient; what trade areas have been covered at reasonable cost, and where competition, or distance, has made distribution expensive. From them it should be possible to determine what forms of advertising have been worth while, and what have proved mere wasters of profit. In fact, here is the possibility of a real laboratory to study the economic aspects of a business, just as a chemical research laboratory studies its technical problems. John Jones, the grocer, can be his own market research staff. If he is in a position to know, for instance, that orders delivered within a one mile radius carry a delivery cost of five per cent, while orders delivered at a distance of ten miles cost fifteen per cent for delivery; he is in a position to restrict his free delivery service and thus cut down at least one item of distribution cost. If he sends out direct mail advertising, and knows that his cost for letters sent to one section of town is one per cent of sales made to customers of that section, while in another section the ratio is four per cent; he is in a position to concentrate his advertising where it is most productive, and make another cut in his cost of distribution.

Similarly with John Smith, the manufacturer. If he knows that there is a good corn crop, and that the price is at a profitable level; he realizes that the salesmen he sends into Iowa will bring back orders as well as expense accounts. Knowing the facts, he spends most of his sales appropriation where prospects for business are good, and keeps down his cost of distribution.

There are two ways to cut distribution costs. One is to spend less money to sell the same volume of goods. The other is to sell more goods without increasing the total amount spent for distribution. Knowledge of every phase of the market is the **sine qua non** of either method.

Many people see in the money spent for advertising an unnecessary addition to the costs of distribution. In many industries, and in many individual cases, it is true that advertising has taken the bit in its teeth and is running wild. The situation is nothing to worry about. In due time, the advertiser who is content with ten cents worth of return for a dollar spent will receive the reward he deserves. The up-to-date business man may spend his millions in advertising; but he will know that it is bringing him in enough business to justify its cost. And he will really know, and not be obliged to depend on an advertising agency for proof. Only the old-timers and the blind imitators—although today there are many of them—play the drunken sailor with advertising appropriations.

Competition is becoming keener day by day. A tremendous and constantly increasing volume of savings is clamoring for productive investment. Most of the sound stocks have been forced upward in price, so that common stock yields are down to four and five per cent. New outlets must be provided for the funds seeking investment; and it will not be hard to finance strong competition in fields where wasteful methods persist. Inefficient production methods have gone by the board so far as successful companies are concerned. Wasteful methods of distribution offer just as great an opportunity to competition.

Efficient distribution is a many-sided problem. The product must be such that it will be readily accepted by the consumer without the need for expensive "education,"—too often a polite term for bludgeoning a man into buying something that he does not want and will never use. It must be satisfactory in use, so that repeat business will be held. Production must not be beyond the capacity of the market to consume at a price profitable to the producer. If the market is glutted, there is always a panic of high-pressure selling which never pays its own way. The sales efforts put forth should be of the nature and extent to produce the maximum results per dollar spent. To insure this, plans should be drawn up in advance, taking into account economic, geographic, and climatic conditions. Records should be kept, in which results are analyzed for guidance in future years. An open mind for new methods and new

channels of distribution, tempered with a plentiful supply of that oldest and rarest ingredient of business, sound common sense, will complete the equipment of an executive who can sleep nights.

We have been concerned thus far with costs of distribution from the business man's standpoint. The consumer also has a stake in the question. He is paying too much for many of the goods he is buying. Moreover, there is evidence that he is beginning to realize it. In many cases, high distribution costs are responsible. In other cases it is a matter of simple profiteering. The basic cause, in either case, is the consumer's indifference. One might go so far as to say that distribution costs are conspicuously high only in those instances where the consumer will stand for them. It is a fact that bulk food products, the goods which interest the mass of people most deeply, are distributed at lower cost than practically anything else. If the consumer ever acquires the habit of spending efficiently;—and in order to enjoy all the luxuries he is learning to desire he may be obliged to do so;—distribution costs will seek rock-bottom levels in a hurry.

It is possible that we are now passing through a transitory economic period. Many people are experiencing their first taste of a surplus over bare subsistence. Millions upon millions are being spent recklessly, foolishly. In such a period it is no wonder that wasteful methods are widespread. But what of a severe business depression, to which we are probably not immune? People living on restricted incomes buy frugally, and in general, more wisely. The best insurance for the future is to pare distribution costs down to "fighting weight."

Good Leadership

A Conversation Heard Between Two Workers in an American Pulp and Paper Mill

By JAMES JAYNES

"BILL, did you see the notice on the bulletin board?"

"No, what is it?"

"Sam Johnson has been made a boss in the Book Mill."

"Well, I wonder if it will go to his head, like it does with most of the fellows when they are promoted?"

"You're right, Bill, just as soon as most fellows are promoted, nine out of ten let it go to their heads. A little authority soon makes him feel like a little **tin god.** It takes a fellow with an extremely clear head and strong character who can stand being promoted without getting a **swell head** about it. The funny part of it is that none of the fellows who do get the **big head** think that they have it."

"You are right, Jim, and I often wonder just what these bosses would do, if they knew how their men size them up and see through some of their petty politics. Why just this morning Joe Williams came to me and said that the fellows in his gang were going to send a petition to the manager asking him to change their boss. He asked me just how to go about it, but I don't want to get mixed up in it."

"As I was saying, Bill, these fellows who get promoted do not seem to realize that the most important qualification which they need for their own success in handling men is **good leadership ability.** A man who has been appointed to be either foreman or superintendent should take a personal inventory of his own **leadership qualifications** at least once a month, lest he become 'too cockey'. He should size himself up and not be afraid to acknowledge his own shortcomings to himself in order that he might strengthen these shortcomings. You know that a chain is only as strong as its weakest link, and a foreman or superintendent for that matter is only as good as his weakest qualification. Some of them are only able to hold their jobs because they have their men scared; it is just merely the power of fear which they are using as a club to get their men to do the work. A great many of us workers are married men and have families. We cannot afford to take any risks; we actually stand in fear of losing our jobs."

"Then there are some fellows, who when they become bosses, build up their own organizations. Now building your own organization is neceessary if a man is to succeed as a boss, but a great deal depends upon the way it is built. One boss I have heard of has built his organization by encouraging certain ones of his favorite employees to report to him privately anything that happens in the mill. You know, a **'grape vine telegraph'** or **'underground telegraph'** whichever you want to call it. In this way they keep the general manager informed as to what is going on. This may be all right, but it gives the 'grape vine' an opportunity to put something over on any one whom he may dislike. Of course, if the boss comes right out and thoroughly investigates both sides of these reports, no harm is done; but I know of one case where an exceptionally keen and bright young man unconsciously aroused the jealousy of one of the 'grape vines' with the result that he was 'black balled' to the boss as to his ability, and had an awful hard row to hoe for about three years. It was only by the hardest kind of good work that he was finally able to break down the prejudice of the

boss. I am glad to say that now the boss has recognized real merit and given the young man a chance and he is making money for the mill, in fact, he has taken a department out of the red figures and put it in the black. Due to the 'grape vine' giving the boss the wrong steer on this young man and the boss not having thoroughly investigated the charges, the mill has lost money during the three years that the young man was in disfavor. We might chalk this up to **poor leadership**, or the lack of **good leadership**, on the part of the boss."

"Bill, I believe that we have a number of employees right here in our own mill who would make wonderful papermakers if the bosses would try and develop their own **leadership abilities.** I wonder how many of our bosses are really trying to multiply their ability through their workers? We have some men here in our mill who would be real money makers for the mill, if the bosses would only try to develop them, and **good leadership** is the only way they can be developed. It takes a man who is really **'big'**, in the true sense, to recognize this fact. The boss who makes it a business to develop every last worker in his department, to make better workers of themselves and can point with pride to having done it, is the man who has **real leadership ability.** I am sorry to say that a great many of our bosses have never tried to make a poor worker any better, they just let them come along and if they don't produce the goods, fire him and hire another. A **good leader** will develop his workers, and he makes this his big job."

"Let me ask you a question, Bill. Have you ever worked for a boss that you did not like?"

"You bet I have!"

"Well what was it about him that you did not like!"

"Oh, a lot of things."

"Tell me some of the things you did not like."

"He was a driver, not a leader. He did not inspire the fellows to do their best; he 'passed the buck'; none of us liked him. Believe me, he was some different from the boss that I have now."

"Well, Bill, what are some of the things you like about your present boss?"

"First, he is on the square with all his men and the company, too. He is reasonable. If you can show him a better way to do a job, he will let you do it and then does not steal the credit from you, but tells the general manager that it was your idea. He always has a kind word for a fellow and it is very seldom that he comes around with a grouch. He has a mighty fine disposition. That makes me think of something I wanted to tell you. Did you know that Ed White, one of the sub-foremen down on the wood yard had lost his job?"

"No, you are joking, Bill, you don't mean to tell me that Ed has lost his job?"

"That is just exactly what I am telling you. About an hour ago I happened to be passing the time clocks and he was punching out and told me himself."

"Well, what was the trouble?"

"It seems that his boss had had an argument with Mr. Cooper, the boss over in the sulphate department, and Mr. Cooper had the best of the argument and told Ed's boss where to get off. Ed's boss was as mad as a bull and he started for the wood yard, ready to bawl out the first man he met. Well, when he got to where Ed was unloading some spruce, he found that all of Ed's men had gone for a drink while the cars were being shifted, and poor Ed was the goat. He started in to bawl Ed out. Ed told him that the fellows had been working in the hot sun for several hours and were thirsty, so while the train crew were shifting the cars they went for a drink. Ed's explanation was like waving a red flag at the bull. His boss blew up good and proper with the result that Ed was told to punch out, he was fired. Now what do you think of that! A mighty small reason to fire a man simply because his men were getting a drink of water and when they could not work at that. One would not think such things possible in this day and time. He is some boss, I should say. How would you like to work for him, Jim?"

"No thanks, Bill; like yourself, I am satisfied with my own boss, he does not blow up so easily."

"Jim, another thing that I like about my boss is that when he says anything you know it is the truth. He don't try to bluff you, he knows his job and when something comes up that he does not know, he will tell you that he does not know it. You cannot put anything over on him. He seems to appreciate when a fellow tries to do his best. You feel as if he has confidence in you, when he is talking to you. He knows how to handle his men and every last one of them is doing his very best; that's the reason we are making new records every month or so. It's a real pleasure to work for a boss of that type."

"Bill, you have brought out some very good points. If you don't mind, I would like to make a list first of the things which we don't like about bosses, and then another list of the things we do like about our bosses. What do you say?"

"It is a good idea and I would like to have such a list for myself. Who knows but I may be a boss some day, and if I am, I want to be a good one, so let's start—you do the writing, Jim."

Things I do Not Like About Some Bosses

1—Poor leadership ability

2—Does not know how to get his men to do their best

3—Because he is boss, thinks he is always right and the men always wrong

4—Does not give the men a square deal

5—He has favorites
6—He passes the buck when things go wrong
7—Does not back up his men
8—Claims the honor or credit for any suggestions made by his men
9—He does not co-operate with the other foremen
10—He never has a word of praise for his men
11—He is a driver, not a leader
12—He is not interested in his men

"Let's take the other side of the question, Jim; that list is enough to make a fellow have the blues."

"All right, Bill, what are the things you like about your boss, or shall we say the qualifications of a good boss?"

"I like that last way you have expressed it best, Jim".

Some of the Qualifications Necessary for a Good Boss

1—Pleasing personality
2—Good judge of men
3—Must not be "two-faced"
4—Must be able to recognize a day's work
5—Know his job
6—Have control of his temper
7—Be considerate
8—Give credit for a good job
9—Keeps cool, doesn't get excited
10—Knows when to bawl a man out
11—Knows how to instruct men on new jobs
12—Plans his work ahead
13—Means what he says and says what he means
14—A good mixer
15—A good worker himself
16—Sets a good example
17—Treats all men alike
18—Co-operates with the workers, other foremen and the company
19—Eliminates waste
20—Kindness
21—Makes his men respect him by his behavior
22—Gets the confidence of the workers
23—Never talks evil about his workers
24—Frankness
25—Is the same all the time
26—Likes his job
27—Likes the men
28—Is willing to take the blame when it is his fault
29—Honesty
30—Doesn't think or act as if he were better than every one else.

* * *

"This is some list, Bill."

"Yes, that's just part of what we could put down. We will have to finish it tomorrow as I see it is now five minutes to one and I must get on to my job."

"Bye-bye, Bill, see you tomorrow."

Notes on Lubrication

By WARREN D. SPENGLER

EVERY industrial plant has had varied experiences with lubrication of its equipment—and most of them give little attention to the cost of lubrication because it is a small item in the sum total of production costs.

Herein lies the opportunity to reduce costs without any investment—an opportunity which should be 100 per cent attractive.

Without any expense other than the time of some salaried employee, a survey of the lubrication of its equipment can be made that will disclose information of real value. Usually it is well to call in the assistance of a lubrication engineer of one of the responsible oil companies—who furnish the technical knowledge and skill that the employee may lack.

The survey should be conducted logically, which would entail the listing of equipment, the various lubricants and their amount now used on the equipment, the cost of the lubricants and the amounts purchased and the amounts kept in the storeroom, as well as the means employed to distribute the lubricants as required. With this data set up, a critical study should be made with the technical expert, to check the suitability of each lubricant for its proper application as to amount, quality and work to be performed.

This study should disclose misapplications as to quality, price or kind and without doubt would show where correct applications could effect real savings.

For example, in one such survey, it was discovered that a high priced grease was used to lubricate the slides on a stoker mechanism—this grease was constantly exposed to coal dust and a cheaper grade was substituted that gave just as good results. The foreman responsible for the use of the high priced grease had no conception of its cost and therefore failed to appreciate the loss.

In the same survey, it was found that a high priced steam cylinder oil was used on a mud mixer for the reason that it seemed "to have body enough to stay put". Stock cylinder oil of one-third the cost was substituted with just as satisfactory results.

Not always is it wise to change oil, especially where results are satisfactory, for a cheaper grade; although some times it may be even advisable to use a higher priced oil because it is more economical. Often a high consumption of steam engine cylinder oil is not due to the oil but to the quality of steam and in this case it is well to investigate conditions in the boiler house.

By inadvertence a statement intended as a display box head for Mr. W. J. Brennan's article on "Achieving 'Built-In' Safety", in the July issue of THE PAPER INDUSTRY, was inserted as the second paragraph of the article.

How Uncle Sam Prints the

Printing the New Bills

This photograph shows the presses in the Bureau of Engraving and Printing at Washington on which millions of dollars worth of new bills were printed to replace the larger and older bills. The paper on which the government currency is printed is made by well-known paper mills after considerable research and experimenting to produce a super quality of paper such as is required for this purpose.

Each Bill Is Examined

This is one of the official photographs of the making of the new money, and shows government employees examining the new bills. Each bill is given a most careful inspection. The portrait of George Washington appears on the one dollar bills; Abraham Lincoln on the five's, and Alexander Hamilton on the ten's. Learn to identify the denominations by the portraits and this will largely avoid mistakes in making change.

A Numbering Machine

This is one of the few pictures ever taken in the Bureau of Engraving and Printing, and shows how the bills are numbered. The Bureau in printing these millions of dollars in new small size currency, is undertaking one of the biggest jobs it has ever had on its hands. As the old money is turned in, it will be destroyed.

New Small Size Currency

A Fortune in These Packages

In this one shipment ready for some bank is thirty six bundles of money valued at $1,440,000 while standing on edge is $20,000 more in negotiable currency. The new small paper money means big money to one small and hitherto obscure group of manufacturers. It is estimated that American men and women will purchase at least 70,000 small size billfolds and pocketbooks within a year.

Treasury Officials Approve

Secretary of the Treasury, Andrew Mellon, left; Henry Herrick Bond, Assistant Secretary of the Treasury, right and Alvin W. Hall, Director of the Bureau of Engraving and Printing, standing, inspecting several sheets of the new small size currency before it was put into circulation. The undertaking of issuing new money was one of the greatest tasks ever undertaken by the Treasury Department and represents the expenditure of millions of dollars.

Protection in Transportation

Looking into one of the huge armored trucks employed by the Treasury Department in transporting the new small size currency from the Bureau of Engraving and Printing to the Treasury Department and to the railroads where the new currency is sent out to the various banks. Armed guards accompany the trucks which are packed with millions of dollars.

How the Riley Mill Won "The Paper Industry" Safety Cup

By ONE OF THE ORGANIZATION

THE idea of Industrial Safety as a necessary part of production has become such a fact in modern business that it is accepted as a routine matter and much the same as supply of raw material. Few are the employers who will say that Safety does not pay and by the same token, many are the industrial heads who have not really considered the intensive battle which has been fought to put safety in its present position as a distinct asset. For years the National Safety Council has been building and perfecting an organization for the betterment of working conditions in the various industries throughout the country.

Founded by a small group of business men who had the interests of the employee at heart and who realized that preventable accidents were an entirely unnecessary loss, this organization has steadily grown until it embraces every production in the land. In conjunction with them, THE PAPER INDUSTRY under the direction of Mr. Fritz has sponsored Safety at every opportunity.

From year to year, various methods of publicity have been used to sell Safety as a worthwhile product. Chief among these have been the annual contests started by THE PAPER INDUSTRY in the year, 1925, between mill members of the Paper and Pulp Section of the National Safety Council. The purpose of these contests has been to stimulate employers to extra efforts in organized safety through the spirit of competition. The rewards offered by THE PAPER INDUSTRY and the National Safety Council, have been in form of cups and plaques of commemorative rather than intrinsic value, in order that the race should be won by those whose ideals were founded on the team work which means real Safety.

THE PAPER INDUSTRY 1927 Safety Contest began on January first for a term of six months. It was divided into three groups; namely, Group A—mills employing 501 or more employees; Group B—mills employing 201 to 500 employees, and Group C—mills employing 20 to 200 employees. It was provided that the winner of each group should be the mill having the lowest accident severity rate (days lost per 1000 man-hours worked), in accordance with the rules and "Scale of Time Charges for Deaths and Permanent Injuries" established by the National Safety Council. However, in the event that two or more mills in any one group should be tied for first place, as of June 30, 1927, the Contest for all contestants in said group would be extended until the tie was broken.

When the winner of each group should be definitely decided, it was provided in the rules that a committee of judges would award to one of these three, having in their opinion established the best record based on accident frequency and severity, man-hours worked, physical conditions and any other contributing factor, the grand prize cup donated by THE PAPER INDUSTRY.

The group cups were donated by the National Safety Council, and at the Sixteenth Annual Congress, held in Chicago the week of September 26, 1927, such prizes were awarded to winners of Groups A and B. In group C, there were six mills tied for first place, having had no accidents, and their severity rate was therefore zero. Under the rules of the Contest, Group C had to continue until one mill remained with a lower severity rate than all the others. It was also accordingly necessary that the award of the major cup should be withheld pending the result of the "C" Contest.

Among those in Group C was the Riley Mill of the International Paper Company, Otis Division, Chisholm, Maine. After twenty-nine consecutive months, this mill organization emerged unscathed and proved to be the Sir Galahad. News of the award came to the men of the Otis Division in the form of a wire from THE PAPER INDUSTRY which read: "Riley wins 1927 contest", and Otis Division cheered. One of our safety organizations had made the grade and we were, are, and always shall be, proud of the achievement.

Twelve years of endeavor for real safety along lines laid down by our own Industrial Department had proved successful. Two years ago with a field of thoroughbreds in safety practice, Riley entered the cup race. It has been a race worth watching. Not merely marshalled columns of figures, but the real human contest of intensely vital bodies of men, striving for supremacy. Every entrant was well trained and skillfully handled, but the very length of the course gave opportunity to prove what has always been the equal contention of our own Industrial Department and the publisher of THE PAPER INDUSTRY, viz: that real Safety must come from unremitting endeavor and not from luck. The stated purpose of Mr. Fritz was to inspire the habit of really working for safety rather than to reward a sporadic flash of "No Lost Time".

We do not know at this writing what slip caused the elimination of our competitors. Whatever it was, it is our sincere belief that it was one of those things

which may happen to all of us, not a chance in luck, but a relaxing at some point of the eternal vigilance which is the price of success in Safety. We do know, however, that the work they have done demands the respect of all men and we are proud to have contended against organizations of such calibre.

In brief, from March 17, 1926, Riley Mill has not had a single lost time accident, and from March 17, 1926, to March 21, 1928, no injury was received that was ever serious enough to require the services of a doctor. The system of our company calls for cooperation between employees and management, for in no other way can Safety become a fact. Such a record over a period of years cannot be a product of luck, but rather the real accomplishment of this cooperation.

The Mill and Men Who Won the Prize

Let us go back twelve years to the Riley Mill of that time. In setting and exterior appearance, the mill remains unchanged. It is located among the hills just around the bend of the Androscoggin river, five miles from Otis at Chisholm, Maine. On the hill, the sentinel line of company houses stood there, as now, guarding the morale of the men with comfortable homes to receive them at the end of their tours of duty. Frank Pakulski as mill superintendent and Everett Strout as division superintendent of groundwood have driven production through these years. With Wm. A. Murray as division manager through the first part, and T. G. Mangan as our present manager, and with Alvin F. Record as division safety supervisor throughout the whole period, the personnel of the mill was then about the same as it is at present. The crew is of varied stock—American, French, Lithuanian, Italian—with the dash of recklessness of old time river men close to them in ancestry and accomplishment. Many's the tale they can tell of the wild exploits of the "gold old days", of jams broken and white water driven at the expense of life and limb when the price of a man's job was his devil-may-care ability to take a chance, and when a maimed and scarred body made him on a par with the recipient of a Congressional Medal or the Croix de Guerre.

Every hazard incident to pulp grinding is found here. The handling from cars to high piles of 30,000 cords of wood annually, and the transfer of this amount to the mill under climatic conditions which reach 30° to 40° below zero in winter, with its consequent freezing hazards. Grinder stones must be handled from cars to storage and from there to installation and again removed when worn out. Hand barkers prepare the wood and ice must be removed from the forebay racks. Infection from river soaked pulpwood slivers and numberless abrasions of heavy duty jobs must be treated. Waterwheels and heavy shafting must be maintained. We say, therefore, that this is not a record of luck or because Riley has been unproductive. Starting with twenty-one grinders, this installation has been improved so that the power of these batteries of woodpulping machinery has been turned into eleven grinders having a greater output.

Safety Work Begun Under John Lundrigan's Leadership

It was upon such a picture and such a background that our Industrial Department looked twelve years ago, and we do not wonder that the scene was viewed with some misgiving. At this time, in 1917, thirteen accidents occurred with 232 days lost time. In common with all industries, the International Paper Company was awakening to the fact that the appalling loss of time and efficiency from preventable accidents must be stopped. It was in this year, therefore, that a program of Safety and Sanitation was instituted, under the leadership of John Lundrigan, our Industrial Superintendent. For a long time associated with industrial problems and actively connected with the New York State Department of Labor, Mr. Lundrigan was exceptionally fitted to inaugurate such a program. This scheme of action, with but minor changes, stands today as the code of safety and sanitation of the International Paper Company and the Continental Paper & Bag Corporation. It is the more truly our own code because no rule was authorized until it had been sanctioned by the separate mill managers as being acceptable and possible of enforcement under their particular hazards.

Early Conditions Were Difficult

Every industrial reader will appreciate the difficulties which presented themselves. Backed by authority from our New York headquarters and inspired by their own personal interest in employee welfare, division managers and department superintendents vigorously pursued the course laid down. In Riley, more than anywhere else, was an ideal situation for applying the principles. The mill was compact and pulpmaking was almost a hereditary industry, so that labor turnover was small, in fact a year's labor curve on paper is almost a straight line. Among the crew were, of course, those who scoffed at iodine and first aid. A chew of tobacco or a splash of shellac was sufficient to heal any cut. By these, the safety program was accepted tentatively as simply another irritating rule to interfere with their work. Men always had been injured and always would in certain occupations and no rules could stop it. It is small wonder that it took time to prove the value of safety rules. Manager, superintendents, safety supervisor and foremen argued, cajoled and threatened. Men were injured and sent back repaired to act as missionaries of the new religion, until in 1919 the toll had been reduced to 10 accidents and 96 days lost.

Safe Way Found the Best Way

It was beginning to be discovered that the idea of safety interfering with work was a fallacy and that in reality the safe way was the best way. The work of the management in bringing this home to the men was invaluable. They insisted upon cleanliness about the mill, and all seconded them until the gospel of cleanliness was received and believed in with almost fanatical zeal. The men found that it was a better place in which to work, and that the hazards of tripping and falling were greatly reduced. Under the skillful attention of "Jimmie" Gallagher, local first clerk and supervisor of the dressing station, cuts and scratches were treated and infections eliminated. To this same "Jimmie" we believe great credit is due for the interest he has taken in chasing down potential infections. There are now men doing full duty, by virtue of "Jimmie's" work in this line, who might have been added to the scrap heap otherwise.

Otis Division Sold to Safety

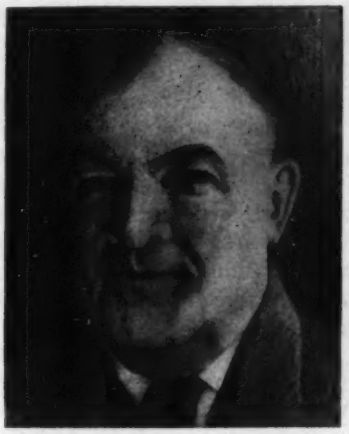
Affiliation was made with the National Safety Council and a regular nursing service and mill physician installed in Otis Division, in order that no stone might be left unturned to get information and expert assistance in the fight against accident results, and Riley was apportioned all necessary help from these sources. The pendulum swung back and forth with ever decreasing arc until 1926, when, on March 17th, it stopped at zero and has stayed there ever since. For this there must be a reason. It is this: the men of Riley are completely sold to Safety. It has become a habit with them to think before they act. A careless act is sure to meet with disapproval and no chance taker is cheered. The superintendent is saved from discipling such a man because his team mates do it. The man who uses a burred or broken tool is as scarce as a dinoceras. Chain falls are inspected carefully before use, and ladders and steps are kept in prime condition.

Riley is a live, modern grinding plant running on full time and is, we believe, manned by a crew of men who never slacken their vigilance in accident prevention. It has been brought about by unremitting work on the part of the supervising force, through direct application of the code of safety of

Silver loving cup donated by The Paper Industry, Grand Prize in 1927 Safety Contest, to be awarded Riley Mill, International Paper Company, at National Safety Congress in Chicago during week of September 30, 1929

Riley Mill crew and executives in 1927 at start of contest

T. G. Mangan
Present Manager Otis Division



Wm. A. Murray (deceased)
Manager at beginning of Contest

Alvin F. Record
Supervisor of Safety, Otis Division

our Industrial Department, and the very result of this contest seems to prove to us that it was enforcement of these rules which spelled the elimination of accidents. This means that the greatest factor in Safety is the direct insistence of foremen and superintendents that a safety program shall be carried out. The rules are their working tools and tools are useless if kept in a box continually. Because of the fact that Riley Mill has kept these tools bright and keen by everyday use it has given the men the habit of Safety which they possess, and which will keep them in their present enviable position as the safest mill on the continent, so long as they keep these tools in working order.

John Lundrigan Expresses Satisfaction

John Lundrigan, industrial superintendent, took no pains to conceal his satisfaction over the standing of the Riley mill in the pulp and paper industry contest for accident prevention, when he was approached by a representative of THE PAPER INDUSTRY for a statement bearing on the award. He also deemed it a good deal of a testimonial to the other mills that participated in the contest in view of the length of time it took to make the decision.

In response to a direct question concerning the system pursued at the Riley mill, which had made it possible for it to win the grand prize, he said:

"We feel that our system of accident prevention had a large part in making possible the performance of our Riley mill, as well as that of several of our other mills that have won distinction by making splendid records in this contest and later ones.

"Our system automatically provides what amounts to an efficiency safety experience contest as between each and all of our own plants all the time. Its essen-

Part of Grinder Room Riley Mill, International Paper Co., Riley, Me.

tial features are based on what we term good plant housekeeping and constant attention to seeing that new employees and employees in changed occupations are thoroughly instructed in the manner in which this company expects them to do the particular job for which they are hired or to which they may be assigned. We add to this intelligent supervision, leadership and example, plus co-operation and sympathy. Our system is past the experimental stage, having been started in 1917 and so far as its fundamentals are concerned, no material change has been made other than by addition, which has consisted of paying more attention to intelligent selection and placing of new employees. Its performance has been so thoroughly checked up that we know it is efficient, we do not say 100 per cent, but an immense improvement over what our operating conditions would be without it.

"The winning of the Safety prize compelled a clean accident record which is something that makes us both pleased and proud, and it is more particularly satisfactory to report that up to the minute the Riley mill is still without a lost-time accident.

"We are convinced that an industry of the character of ours cannot be carried on efficiently without being conducted according to the best safety principles. Therefore, when we do our part in providing the necessary guidance, information and leadership to make an efficient workman, we feel we are at the same time providing a safe workman.

"It would be understood that while our job is accident prevention, we pay attention to the care and treatment of every accident which happens to a worker and we follow this up to prevent complications.

"The splendid record of the Riley mill was made during the management of the late William A. Murray whose passing has been so keenly regretted. He would have been immensely gratified at the winning of the grand prize by the Riley mill and it is too bad that he is not here to share in the mill's distinction. It is a pleasure to report that the splendid record established by Mr. Murray at the Riley mill is being continued by his successor, Thomas G. Mangan."

Cost Accounting in the Paper Industry

Part VIII—Standards (Concluded)

By D. A. WILCOX
Oxford Paper Company, New York

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

THE standards still to be considered are concerned chiefly with questions of production, including efficiencies, shrinkages, time allowances and the like. Depending upon the character of the system used they may either be statistical or a part of the general books. For example, in an actual cost system and in job order costs, orders are charged with whatever materials, time, etc., that they actually consume and here such standards are statistical, but in a predetermined cost system the orders are charged only with the standard usages, and the difference between the actual and the standards are charged off through the variance accounts to profit and loss; hence in such a system the standards are tied into the general books.

Like all other standards, those of production are yardsticks whereby the results of the operations may be gauged and attention concentrated on items which are out of line, thereby saving much time for the management. Here, as with all standards, each must be suited to the particular case and care must be taken to see that the facts developed really tell the story intended and that the information is useful and an aid to control. Many systems are developed wherein variance accounts are built up that are so inclusive as to be useless as a control—the underlying causes being so complicated as to defy analysis, or the standard may be so general in nature that it is no help in controlling any particular situation. Thus a mill making a large variety of papers may adopt a standard average cost per ton and compare the month's average with this standard. This may be interesting and of some use in getting a general perspective of the month's operations, but when analyzed, it will be found that so many factors affect the average cost, all of which may be perfectly legitimate during the month in question, that even though the standard average cost be far exceeded nothing can be done about it. Such a standard is of little practical value as a control.

Control a Matter of Details

Unfortunately, controlling costs requires pinning down to particular details, as generalities are worse than useless. Taking the average cost as an example, we may find that it was high because the allowance for calendering conversion was high. Does this aid in lowering costs next month just by itself? No, we need to know what caused it. Was it because more paper was calendered than usual or because the average conversion of the paper calendered was high? Right away we start to get down

to specific cases. Suppose we find that the calendering conversion was high; then was it because of low basis weight, or because of narrow rolls precluding good production, or was it due to some inefficiencies in the calendering itself? We must view it in the light of the calenders alone and then in conjunction with existing conditions. Thus step by step we narrow our inquiry till we find some specific item to correct, and the general average, far from being a help, may utterly deceive us.

In setting up a cost system one must be essentially practical. Each step, each form and every standard must be viewed in the light of: "Will it help locate some fault **that can be corrected,** or will it tell a story that really leads to a control?" There are many temptations to work up elaborate systems that give a lot of useless information; systems that are so simple that they tell nothing at all, or some which develop variances, that when all is said and done, are of no help to the management. If the cost accountant will remember always to try and be practical, to get the "management viewpoint" and not fool himself (and his executives) by following up pet theories, but work out things that **can be used** and given in **a way that will be understood,** he will earn his place in his company.

Standards of Production

Standards of production should be flexible. Having a fixed standard of production for conditions that vary is one of the glittering generalities just referred to. We set a standard for a machine of, say 30 tons a day. This is useful only when the machine runs constantly on the one type of paper. If the basis weights change and, for instance, get low, we may expect lower production. The same is true of the deckle. Finally we find so many factors affecting the production that if the standard is reached at all it is just a matter of luck.

Standards Should Consider Conditions

Standards of production should take into consideration prevailing conditions.

The only useful information a standard of production can give—and this is invaluable—is, Did the machine do its full duty today?

To set such standards, assemble all the factors that affect production and list them. Place opposite each the manner in which it affects the production: in direct proportion, in inverse proportion and so forth, and with this information at hand develop a formula whereby, with the conditions known, they may be substituted in the formula and the standard production for the period worked out and compared with the actual. Then you have something which is of real value and you know definitely whether the production that day was satisfactory or not, with no "ifs and ands" about it. You obtain a real control.

Where a uniform product is made, such as in a pulp mill, paper on a newsprint machine, and the like, a fixed standard of production is applicable and of value.

Fixed standards of production may be used to advantage for the following: Pulp mills, bleach plants, machines devoted exclusively to one product, etc.

Flexible standards should be used for the following: machines making a variety of products, paper machines in specialty mills and the like, the finishing room.

Standards of Efficiency

Efficiency is an elastic term and before we set up standards of efficiency we should consider thoroughly just what it is we wish to measure and, most important, that all those who have to use the standard understand it also. This latter is a consideration frequently overlooked and a potent reason why cost figures given out should be as simple as possible. The accountant may be as technical as he pleases in his working papers to develop leads for his own use, but he should be very careful about giving the results until they are reduced to the simplest concrete facts.

It is easy to become confused as regards the scope of an efficiency figure. Let us see, for example, the efficiency figures that can be developed about a paper machine. Each is perfectly correct for what it aims to show, but differs materially from the others.

Various Basis of Paper Machine Efficiencies

First we can see how well the machine ran under actual prevailing conditions. This means taking into consideration the actual basis weights, deckles, speeds and operating time, as well as the peculiarities of the machine itself, and comparing the actual production with the standard, also taking these factors into consideration. The efficiency on this basis may be stated as 100 per cent.

Secondly, we could neglect the peculiarities of the machine and calculate the standard on the most that any machine could make with the basis, deckle speed and operating time prevailing. This might give us an efficiency of, say 95 per cent, the 5 per cent difference representing the age of the machine and general features which have been found by experience to hinder it from reaching 100 per cent absolute efficiency.

Thirdly, we could consider, not the actual speed, but a standard speed for the kind and weight of paper made, and figure the efficiency on the basis of what would have been made had the machine been run at these standard speeds. This might give us, say, 90 per cent, the 10 per cent representing less than standard speed that day.

Fourthly, we might use standard operating time, making only a reasonable allowance for shutdowns instead of the actual operating time. Let us say that this gives us 85 per cent, the 15 per cent representing excess lost time.

We might also have combinations of any of the foregoing, any one of which would give us still different efficiency figures. Thus, depending entirely on what we want to know and what we consider as a proper basis for our particular mill, we can get efficiencies of from 85 per cent and less, up to 100 per cent, all for the same machine, production and conditions, each being correct for its particular purpose.

Capacities of Figures to Deceive

Few people appear to recognize the inherent limitations of figures and their capacity to mislead. **It is not sufficient to know the results of a mathematical process, but one must also know the premises on which it was based.** It is sometimes said, "you can prove anything by statistics", and this is particularly true of efficiency figures.

The answer to the whole thing is this:

(1) Ascertain what the management desires to know about the machines.

(2) Figure efficiencies strictly on this basis so that they will represent just what the management believes they are capable of.

If it is desired to know how well a particular crew operated with a given machine under conditions prevailing that day use actual basis, deckle and speed, and then develop a factor to represent the characteristics of the machine.

If it appears that speeds are too low, figure separately what they would have made at the standard speed and note the difference. You can then prove easily that low speed lost so much production, and hence money, and that fact by itself will be readily understood, but do not mix it in with the other figures unless the idea is first "sold" to the management. You can educate the executive up to new and better costs, which is one of the cost accountant's prime functions, but until they are understood by the management it is well not to attempt to force matters. Professor Reitel says: "If you have a crazy boss, give him crazy costs; he won't understand any others and they will be wasted—if you have trained cost men as executives then the most technical costs —others would do them no good."

By all means work out efficiencies, but be sure that all concerned know what they mean and think along the same lines.

Standards of Losses

Nearly every operation in a paper mill involves losses of materials on conversion. We get only about 50 per cent of the dry weight of the wood as pulp. We lose some of this pulp in washing, bleaching and handling and still more when it goes to the beaters and over the machines. Our losses do not stop there. We lose some of the conversion on the rough paper in the finishing room as broke and trim and we lose more in the coating mill as waste and seconds. We lose moisture, our paper as shipped weighing less than the rough paper by drying out. We are allowed 5 per cent moisture in the finished paper and may ship 4 per cent moisture. We have lost 1 per cent. We may sell paper on a nominal basis and it may run heavy. We have also lost here.

We pay money for wood, clay, alum, etc., as the materials come to us. We may be fortunate in some cases if we ship 20 per cent of the weight we received, when water and all is considered. All this involves losses in freight charges entirely apart from anything else and it behooves us to save all we can out of our raw materials.

Is it any wonder then that the element of losses is most important? Should we not watch each step and see that, so far as is humanly possible, we get out of every pound of raw materials all the finished paper that can be secured? It is owing to this fact standards for allowable waste and shrinkages are of chief importance.

Material Control Through Standards

How best may we control this situation? Standard costs provide one means.

Suppose we consider actual costs in a soda pulp mill. Let us say we have made 100 tons of pulp under the following conditions:

Usages, actual

Chips, 200 cords	@	$15.00	$3,000.00
Alkali, 15 tons	@	30.00	450.00
Bleach, 20 tons	@	50.00	1,000.00
Lime, 25 tons	@	14.00	350.00
			$4,800.00

Material cost per ton $48.00

Suppose the average cost for the previous year was $45.00. We know that the cost was high and we can even locate where, but all in all, this does not give us a very specific control.

Suppose, however, we set standards of usage as follows:

Chips, 1.90 cords per ton.
Alkali, 275 lb. per ton.
Bleach, 300 lb. per ton.
Lime, 500 lb. per ton.

We can then set the costs down as follows:

Credit

Chips	200 cords	@	$15.00	$3,000.00
Alkali	15 tons	@	30.00	450.00
Bleach	20 tons	@	50.00	1,000.00
Lime	25 tons	@	14.00	350.00
				$4,800.00

Debit

Soda	190 @	$2,800.00	Dr. Var. $200.00
Soda	13.75	412.50	37.50
Soda	15.00	750.00	250.00
Soda	25.00	350.00	.....
		$4,125.50	$487.50

We say: "Soda pulp should have cost $41.25 per ton for materials, had all gone well. We lost $487.50 on this 100 tons because it did not and this loss was occasioned as follows:" The pulp is charged to the paper mill at the standard cost and the loss is applied directly to profit and loss. This is apt to make a deep impression on the management, as it gives a direct control and **tells exactly how much each item lost or gained through deviations from the standards.** Psychologically it is much more impressive to show on the financial statements that a direct loss was incurred than to state the mere fact that the average cost per ton was high.

Similarly standards of waste and losses can be set up all along the line and handled in a similar manner. We charge into the product the standard usages, credit the inventories with the actual and charge off to the variances the differences required to balance. We then analyze the variance accounts item for item to see just which ones were the causes of the variances.

Control of Time

Loss of time is handled similarly in a predetermined cost system. We charge the product with the standard time for the particular product and credit the centers with the actual and the variance accounts with the amounts necessary to balance. These variances represent the excess time used to make the product and are, in themselves, a good measure of efficiency directly in terms of dollars and cents, provided, of course, that the standards themselves are fair and accurate.

For each operation in which materials are used, set a standard for usage (considering the normal shrinkages) and compare the actual usages with them. Figure out what the product would have cost had the usages been at standard and compare actual with them item for item. Set your standards on a practical basis—high enough to be a goal, but not so high that they cannot be attained.

If practical to get data from other mills you may set your standards on the basis of what efficient mills are doing and see how your own compares with it. This should excite interest in how they do it and may prove that new methods, equipment, etc., would be a practical investment and pay for themselves out of savings in a relatively short time. Such standards may be the basis of separate studies and it might be well not to incorporate them into your daily costs as they would violate the principal of setting standards that can be met in your own mill as now arranged and hence be disregarded as impracticable by the mill force.

The Manual of Standards

It is well to prepare a manual of standards for general distribution among all who have use for the figures. Such a manual should contain **all the standards** used in the mill, together with full explanations as to what they mean and how they were derived.

A most interesting development is to take the mill as a whole and develop the standards on the basis of the standard finished production per diem so that all items key in together. This will not only avoid frequent inconsistencies in the cost set up but will be a valuable aid in bringing out unbalanced conditions and be a basis for a budget.

Assume we have a finished production of 100 tons.

We take the finishing room shrinkage at, say, 8 per cent. This gives us a necessary rough production of 108.5 tons.

Our standard usages, say, are:

50%	soda or	54.25 tons soda
50%	sulphite, or	54.25 tons sulphite
10%	clay, or	10.85 tons clay
5%	size, or	5.43 tons size
5%	alum, or	5.43 tons alum

Using the standards previously noted for the soda we get for the 54.25 tons of soda:

Chips, 1.9	93.08 cords
Alkali, 275 lb.	7.40 tons
Bleach, 300	8.14 tons
Lime, 500 lb.	13.62 tons

and so on for every item in the mill. This gives us the necessary usages we must provide for and aids in many ways.

In setting the standards for rates we need not use the foregoing standards but what we know to be the normal productions and capacities. This will tell us at once what to expect in the way of a normal unearned burden. If our normal capacity for soda is 100 tons, we may expect an unearned burden of 45¾ tons unless we can find a market for the excess, and we know we have such an overcapacity. There ought to be no occasion to increase the soda mill for some time to come.

Similarly, we follow each item and each center and bring out the expected usages and the productions of intermediate products required to make the standard finished product. We show the normal practical capacities and we know just where we stand, wherein lie the necks of the bottle and where the bulges, and we give all concerned a full understanding of what the standards are and why.

Owen D. Young tells of how, as a young man entering college, he thought he was very good in mathematics and desired to enter quite an advanced class. The professor told him to return in a short time and he would give him an examination. He did so expecting to solve integrate problems in calculus and the like, but found on a black board the single question, "What is 2×2———and why?"

In dealing with standards it is essential that all who are expected to get any benefit out of them should know, What and Why?

In succeeding articles we shall attempt to show some practical applications of the foregoing principles and their reducing costs.

Current Thought by William Sibley

Is the "Noble Experiment" Worth While?

So bitter is the feeling and so deeply entrenched are the opinions of the opposing camps over the question of Prohibition that a writer risks his journalistic life when he attempts to draw conclusions in the matter. I am of the opinion, however, that the importance of the matter justifies the risk, and this month I am going to talk about Prohibition. Let me hastily assure you, at the outset, that this article will contain no "moral appeal." I am not interested, at this time, in discussing shoeless children, wives with black eyes or the connection between the old time saloon and the gambling fraternity or the scarlet sisterhood. Nor, am I interested in the good-fellowship, the rollicking songs, or the merriment that may be found in the perspiring glass.

This article will deal with the **economics** of Prohibition, and is dedicated to the executive personnel of the companies who, collectively, make up the paper industry.

Weighing Prohibition in the balance of economics, we have but one source of information—the ledger. And the figures set down in the ledgers of this country are put there by cold-blooded, hard-headed business men who are interested only in facts. Naturally, it is more encouraging to look at black ink figures than those on the debit side. Hence, the presentation, first, of the following facts:

According to the Savings Bank Division of the American Bankers' Association, individual bank deposits in the United States have increased 192 per cent during the past ten years. In 1919, there was a total of 18,221,453 individual savings bank deposits. In 1928 this number had grown to the amazing total of 53,188,384. Roughly speaking that is a savings bank account for one out of every two men, women and children in the United States. This is a fact that should kindle the imagination.

During the same years, 1919 to 1928, the individual deposits in these savings banks mounted from $13,000,000,000 to a total in excess of $28,500,000,000. Think of it, please—twenty-eight billion, five hundred millions of dollars in the savings (not checking) accounts of our banks. A tidy sum. The increase in both number and amount of deposits is all out of proportion to the increase of population or growth of industry, so that it is obviously impossible to have such increases without enlisting the laborer, the tradesman—all classes of workers.

Individual memberships in Building and Loan associations jumped from 4,289,326 in 1919 to 11,336,216 in 1927—the latest available figure from the Russell Sage Foundation. Since individual home ownership does more than any other single factor to promote good citizenship, love of country, stability of industry and thrift in general the above figures cannot be passed over lightly.

There are those who have lived long enough in metropolitan centers to have lost the perspective of the small town, and from these people there frequently comes the pessimistic remark that we are rapidly becoming a nation of apartment dwellers. To those of such mind, let me say that in New York City alone the number of one-family houses and privately owned homes jumped from 10,028 in 1922 to 60,029 in 1927. In this same City there were, in 1922, 3,019 two-family homes. What the number is today I don't know, but in 1927 the figure of 3,019 had grown to 32,934. The value of such property, during these five years, increased from $83,448,000 to considerably in excess of $900,000,000.

From the insurance year book of the Spectator Company there comes the interesting and amazing figures that while in 1919, 12¾ million policy holders had a total insurance of $24,167,000,000,—in 1927 there were 27¼ million policy holders, the total amount of insurance held being well over 63 billion dollars. The paper required for the extra 15 million policies, together with the application blanks, medical examiners' forms, correspondence, record

books, annual premium notices, receipts, etc., would doubtless be found to be a sizeable piece of business for some mill.

Such statistics might easily be continued to the point of fatigue. Increases in grade, high, and academic school attendance, the growth of the electrical industry and its ramified influence, the startling increases in motor, rail and air travel, the tremendous good that has come from the vast increases in employees stock ownership of manufacturing plants, and countless other factors might be cited without difficulty.

Now, certainly, I am not going to credit all of this prosperity, which is the envy and wonder of the world, to Prohibition. To say that the tremendously increased buying power of the average American citizen is due entirely to the Eighteenth Amendment would be sheer bunk and balderdash. But, I do say that some fraction of the present era of prosperity is due to Prohibition—and, in my personal opinion, a large enough fraction to make every manufacturing plant executive sit up with a jolt, were Prohibition suddenly to be eliminated. However, this is not the place for personal opinion. "Opinion" has no place in cold economic facts. I merely wish to ask you—the executives of the country's paper and pulp mills—can you conscientiously explain our present prosperity and high standards of living without taking into consideration the National Prohibition Act?

And now for the debit side of the national ledger.

The average annual consumption of beer during the three years just prior to the War, war time prohibition and the enactment of the National Prohibition Act, was 61,543,000 barrels. At 30 gallons to the barrel there was an annual consumption of 1,845,000,000 gallons. A lot of beer! That beer was worth, at pre-war prices, three billion dollars.

It is not without reason to believe that the price of beer would have increased had we never adopted Prohibition—and that the 5c glass of yesterday would have become a 10c glass of today. Also, it is within reason to believe that the consumption of beer would have increased, at least in proportion to the increase in population. Calculating these two factors, I believe it safe to say that, had we never had Prohibition, we would now be spending ten billion dollars a year on beer.

Naturally, there is no possibility of comparing the cost of illegal beer today, but allowing one billion dollars as being spent on home brew and illegal beer, the bookkeeper for the nation's ledger must charge up, as lost sale, an amount of $9,000,000,000 for beer alone.

Under the same method of computation, I have calculated the possible present day loss of sale and manufacture, in wine and distilled liquors, at one billion dollars. That assumed figure came out of the actual $591,000,000 that was spent yearly on refined liquors and wines during the three year period just preceding the World War. Adding this loss to the one cited in the foregoing paragraph, we have a total loss in sale and manufacture, due to Prohibition of about $10,000,000,000.

As a matter of fact, I am not far wrong in this computation, since having an earned income in the United States (1916) of $34,300,000,000—and an expenditure for booze of $3,591,000,000—it is fair to assume that one-tenth and probably more, of the total earned moneys in 1928, which was $81,000,000,000, would have been spent on booze, and that this figure would have been between eight and ten billion dollars.

It is refreshing to know that, without prohibition, we would annually be spending eight billion dollars on booze, for—making all the allowances you wish for bootleg hooch—you can't get a figure that big. Certainly, in all fairness, it must be admitted that by far the greater portion of this "loss" is now being spent on savings bank accounts, insurance policies, and the luxuries and comforts of life. This conclusion is borne out by the statement of E. C. Sams, President of the J. C. Penny Company, that: "purchases of liquor now are mostly limited to those who have surplus funds after providing for their families."

* * *

Gentlemen—it hasn't been so very difficult during the past ten years to continue to show increased sales. We have all had a comparatively easy task, since the War, in making a favorable sales showing. True—some of the sales managers who were "marvels" during the post-war boom lost their places when that boom crashed in '20 and '21, but for the most part the nation's market has been bullish.

Now the time is coming when increases in sales are going to be more and more difficult to show—if only because there is an inevitable saturation point to everything. There is nothing but has a sales peak, and actual peaks are not easy things to surpass. Understand—I am not predicting or even intimating an approaching business depression. Rather I am referring to the rapidly increasing necessity for finding new markets, new applications for your product, new sources of supply. As time goes on, the sales manager's job will become increasingly important.

Knowing that Prohibition is throwing **your** way, rather than to the brewer and the distiller, more than eight billion dollars a year—let's do everything in our power to prevent the 18th Amendment from being nullified or repealed. There is nothing "moral" in this. It is an appeal to your sound, economic, common sense.

One hundred pounds of new cotton rags will make about eighty pounds of pulp, or about seventy-five pounds of paper. *U. S. Dept. of Commerce.*

A general view of the Great Lakes Paper Co. Ltd., showing the general layout of the buildings from the chipper house at the extreme right to the shipping shed at the left

New Mill of Great Lakes Paper Co.

350 Ton Newsprint Mill of Backus Brooks Company at Fort William, Ontario, Contains World's Largest Paper Machine

THE new mill of the Great Lakes Paper Company, Ltd., at Fort William, Ontario, is the latest and largest of a series of newsprint mills built by the Backus Brooks Company to utilize the pulpwood from extensive limits in western Ontario. The mill is strategically located both as regards delivery of the raw material, and the shipment of the finished product, which is supplied to a number of newspapers in both Canada and the United States. Wood can be delivered at the mill either by railroad; both the Canadian National and the Canadian Pacific tap the section where the limits are located, or by river. The mill is on the Kaministikwia River, which provides means of driving logs from a large section west of Lake Superior. The greater part of the wood is, however, shipped in by rail. Deliveries may be made either by rail, or by lake steamers, from the Lake Superior port at Fort William or Port Arthur.

The mill proper consists of a group of nine buildings, including a power plant, substation, pumping plant, filter house, slasher and chipper houses, a sulphite plant, and the machine room which contains the paper machines, and other equipment used in the final processes. The arrangement of the buildings, which is shown in Figure 1, is such as to permit of straight line production, the raw material entering at one end of the mill and being loaded for shipment at the other. The buildings housing what may be described as preliminary processes, chipping, grinding, sulphite cooking, etc., are all more or less grouped around the river end of the mill, so that there is a continuous flow of material from the stock piles to the machine chests. The existing installation gives the mill a capacity of 350 tons of newsprint per day, and the whole layout of buildings has been planned so that it will be a comparatively simple matter to double the capacity if future developments should make such a course advisable.

In addition to the features already mentioned, there are others in connection with the mill that are of considerable interest. One is the paper machines that have been installed, which were built by the Bagley and Sewall Company. One of them is a 264 inch, and the other a 304 inch machine, the latter being the largest machine ever built. There is a total of 1,072 Timken bearings used on each machine. One of the machines, the 264 inch has already broken the record for production, having produced over 151 tons of paper in twenty-four hours. Another point worthy of mention is the way in which advantage has been taken of synchronous motor drives to improve the overall power factor of the mill load. In several cases synchronous motors are used to drive equipment whose duty cycles, or load characteristics are such as to have a bad effect on the power factor of induction motors. As it is, the overall power factor of the whole installation is over .90.

Power

The complete mill represents a power load of about 30,000 kw., which is supplied from two separate sources. One, which supplies about 20,000 kw. is the 110,000 volt lines of the Ontario Hydro-electric Power Commission. The other is a steam turbine generating plant located at the mill. In the latter case, the electric power is really a by-product of the plant that supplies the steam for the mill processes, the steam being used in the turbine-generators before being delivered to the paper mill and sulphite plant, for process work and heating. The boilers and generating equipment are housed in a building, close to the mill building, which is divided into two sections. One, 180 feet long by 90 wide, contains the boilers, and coal storage and handling equipment. The other 48 feet long by 52 feet wide, contains the turbine-generators and the necessary power control and distribution apparatus.

The boiler equipment consists of four Heine VX type boilers, with a rating of 1000 hp. nominal, 3500 hp. actual, each, and having Erie City and Combustion Engineering water-cooled side walls, arch supports, and bridge walls. All of them use pulverized coal, there being two Strong-Scott "Unipulvo" pulverizers to each boiler. Each pulverizer has a rated capacity of 6,000 lbs. of coal per hour. The pulverizers, which are entirely of the self-contained type—handling all primary and secondary air through the pulverizer with the coal, are individually driven by 100 hp. double squirrel cage induction motors. No other fuel or air equipment is necessary, since the motor on each pulverizer also furnishes power for driving the fan which supplies all combustion air. The pulverizer fan draws preheated air directly from Sturtevant preheaters, located behind and above the furnace. The pulverizers are of the wide clearance, air-swept attrition type, and are capable of handling a 16 per cent overload, with coal containing 18 per cent combined moisture. See Figures 2 and 3.

Coal is delivered from a track hopper directly to a crusher located in the conveyor tunnel. From the crusher, the coal goes to the boot of a bucket elevator, which delivers it to a belt conveyor, running the length of the boiler room, underneath the roof. The conveyor delivers it to a storage bin by means of a traveling tripper. The bin, which provides a total storage capacity of 1,100 tons, extends along the whole length of the boiler room over the firing floor at a level well above the boiler fronts. Coal is delivered to the hoppers of the pulverizers by a traveling weighlarry which runs on an overhead track parallel to the boiler fronts, and records

the amount fed to each boiler. Feed water is supplied to all the boilers from a common 300,000 pound Elliot deaereting feed water heater. There is a Permutit water softener in the water supply circuit.

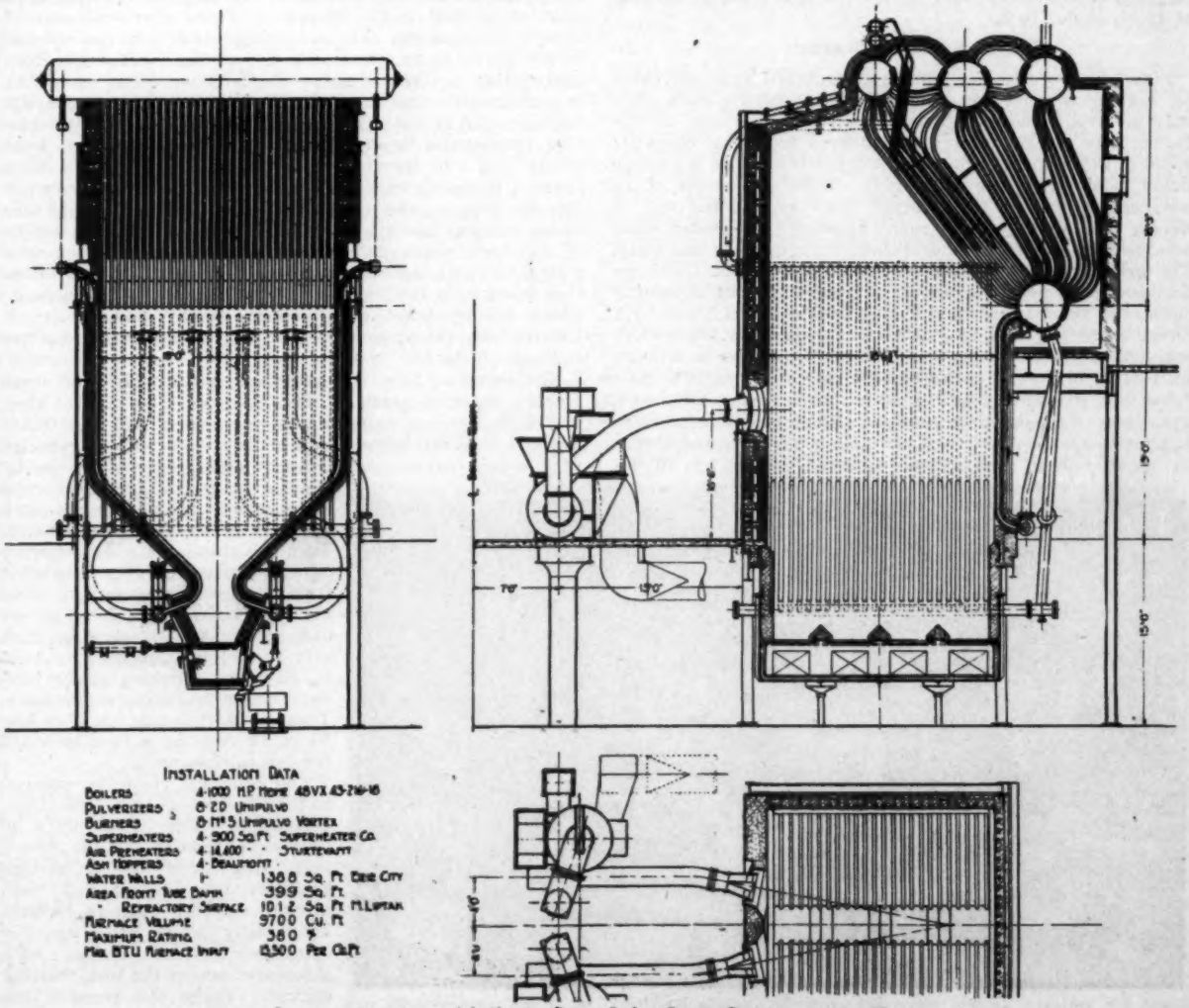
At this point it may be mentioned that the entire water supply for the mill is obtained from the river, by means of three 6,500 g.p.m., Allis Chalmers, single stage, vertical centrifugal pumps driven by 100 hp. squirrel cage motors. From the pump house, which is some distance up stream from the mill, the water is delivered through a 36 inch main to a filter house just back of the machine building. Here impurities, flotsam, and debris generally are removed by three Murray filters, from which the purified water is pumped to its point of utilization by centrifugal pumps. The water for the boiler plant is pumped to a surge tank 10 ft. in diameter by 14 ft. high, whence it is supplied to the feed water heater.

Steam is generated at 455 pounds working pressure, 150° superheat, for the turbines. A Fisher two-stage pressure reducing station is installed as a by-pass which provides make-up steam in case the turbines are not operating. That for process use has just enough superheat to keep it dry until used. Each boiler is equipped with a Cochrane 8 in. steam purifier between the boiler nozzle and the superheater. Each pair of boilers has a common smoke breeching which terminates in a common stack 200 ft. high by 13 ft.° in diameter. Carrick combustion control is used and each boiler is equipped with a Sturtevant preheater and induced draft fan, driven by a 100 hp. motor. There are two General Electric turbine-generators in the power house. One is of the double extraction type and exhausts at a 28 in. vacuum. It is rated 5,000 kw. (6250 kva.) 80 p.f., 2300 volt, 3 phase, 60 cycles. The other is non-condensing, and is rated at 4,000 kw. (5000 kva.) 2300 volt, 3 phase, 60 cycles. These two machines operate in parallel, and are equipped with an electric trip for protection against over-speed. One of the turbines is shown in Figure 4.

The power furnished by the turbines is delivered to a transformer substation where it is stepped down to working voltage by a bank of 6 General Electric single phase, 1333 kva., 2200/550 volt power transformers. The substation is equipped with control and distribution apparatus for delivering power to various points about the mill. The 110,000 volt power is brought to a transformer substation, where it is stepped down to 2200 volts by a bank of three General Electric 13,333 kva., 110,000/2300 volt, single phase, 60 cycle power transformers. At present this station supplies power to operate the paper machines and the grinder room equipment exclusively.

Wood Storage

As has been said, wood is delivered at the mill by two mediums, the river and the railroad. Since the actual delivery points are some distance from each other, two sets of slashing and barking equipment have been provided, one at a dock along the river bank, and the other at the railroad. The general procedure in both is practically the same, and the wood, after being slashed and barked is delivered to common storage piles, or to the grinding or chipping ma-


INSTALLATION DATA
BOILERS 4-1000 H.P. HEINE 48 WX 43-216-16
PULVERIZERS 4 B-20 UNIPULVO
BURNERS 4 B-N°5 UNIPULVO VORTEX
SUPERHEATERS 4-900 Sq. Ft. SUPERHEATER CO.
AIR PREHEATERS 4-14,400 " " STURTEVANT
ASH HOPPERS 4-BEAUFORT
WATER WALLS 1368 Sq. Ft. ERIE CITY
AREA FRONT TUBE BANK 399 Sq. Ft.
" REFRACTORY SURFACE 1012 Sq. Ft. H.LUSTRAK
FURNACE VOLUME 9700 Cu. Ft.
MAXIMUM RATING 380 %
MAX. BTU FURNACE INPUT 13,300 PER CU.FT.

Cross-section views of boiler in Great Lakes Paper Company power plant

chines, by a system of inter-connecting conveyors. The procedure for the river wood is as follows: The logs are raised from the river by a chain and dog conveyor which carries them up a ramp to the saws, where they are cut to length. After being cut, the logs drop into a drag trough conveyor, which delivers them to the barking drums. There are three of these, each driven by a 100 hp. slipring induction motor. The barked wood is delivered to a button-type log conveyor, which may carry it either directly to the grinding room, or it may be diverted to another conveyor that carries it to the storage pile. Bark, splinters and debris from the drums fall onto a conveyor that carries them for use as fuel to a small boiler plant used to supply heating steam for some of the mill buildings.

In the case of the wood delivered by railroad, the sequence of operations is as follows: The railhead tracks run parallel to the storage piles, there being two conveyors parallel to the tracks. One, on the unloading side carries the logs to the slashers, after which they are delivered to a group of five Canadian Ingersoll-Rand barking drums, located outdoors and individually driven by 100 hp. motors. From the drums the logs go to a button conveyor, which delivers them to the storage pile stackers. There are two storage piles, with a capacity of 20,000 cords each, one stacker being provided for each pile, with provision for three future stackers. Wood from the piles is delivered either to the grinder room, or the chipper building by a button conveyor about 550 ft. long, that connects with the storage pile conveyor at one end. This conveyor runs directly to the grinder room, and logs for the chippers are diverted onto a short drag conveyor running at right angles to it.

Grinding and Chipping

Since the processes for making groundwood pulp, and those for making sulphite are grouped in two separate units, they may as well be considered separately. In the case of the former, the barked logs are delivered to a log conveyor running to the grinder room, that deposits them in a storage flume, where they are thoroughly washed by means of an overhead spray. From storage they are floated out in flumes running across the room, between the grinder lines, whence they are lifted and stacked alongside the machines. The grinder equipment consists of 36 Pascol and Carthage four-pocket grinders, arranged in groups of four extending across the room, as shown in Fig. 5. Each group is driven by a direct connected 2800 hp., 2200 volt synchronous motor with auto-transformer starting and manual control. The motors are all located in a room parallel to the grinder room. The pulp from the grinders goes to a common sump, whence it gravitates through sliver screens. From the sliver screens it goes to the knotters, fine and tailing screens, and thence to eight Oliver groundwood deckers, driven by 10 hp. motors through Oliver Timken bearing-equipped worm gear speed reducers. The pulp then goes to the groundwood storage chest. The agitators on this chest are driven by 30 hp. squirrel cage induction motors through Cleveland Timken-equipped gear reduction units.

Fig. 2—Front view of Great Lakes Paper Company boiler room showing Unipulvo pulverizer installation

In the case of the sulphite, the logs are delivered to a washing drum for removing dirt, and then to a four chain conveyor, which travels across the chipper building at a level about that of the chippers. There are three sets of chipping equipment, each consisting of a Carthage chipper driven by a 100 hp. motor, one 4 ft. "Hummer" chip screen operated by a vibrator and a chip crusher. The equipment is arranged so that most of the chip travel is by gravity. Logs are fed to the chippers by gravity, and the chips drop into an elevator boot, whence they are raised to a point where they will travel over the screens by gravity. Those reduced to the correct size drop onto a belt conveyor, which delivers them to the inclined belt conveyor to the chip bins in the digester house. This Link Belt conveyor has a length of 380 feet, and a 20° angle of lift and is equipped with a Merrick recording weighing device. Oversize chips go to the chip crusher for further reduction, and thence to the elevator, which delivers them to the screens again. Sawdust is delivered from the screens to the belt conveyor which carries it to the boilers.

The equipment in the sulphite plant consists of three Horton digesters, each 17 ft. in diameter by 56 ft. high, and built for a working steam pressure of 125 lb. There are two sulphur burners and coolers each with a capacity of 125 tons per day of 24 hours. The acid towers are of Jenssen design reinforced concrete construction, there being two, each 103 ft. high by 11 ft. in diameter. Together they have a daily capacity of 250 tons. Sulphur is handled from storage by a Jeffrey drag conveyor, driven by a 5 hp. motor, and carried to the melting tank over the sulphur burners by a 40 ft. Stephens-Adamson bucket elevator and a travelling weigh larry. Three reinforced concrete blow pits 60′ x 24′ deep have been provided for the sulphite unit.

The sulphite stock is pumped to the screen room by a 1400 g.p.m. centrifugal pump driven by a 40 horsepower motor. In the screen room, the stock passes through knotters, over riffles, and then through six Bird sulphite screens, individually driven by 75 hp., 550 volt, synchronous motors, with automatic, across the line, starting control. From the screens, the stock passes to six Sherbrooke

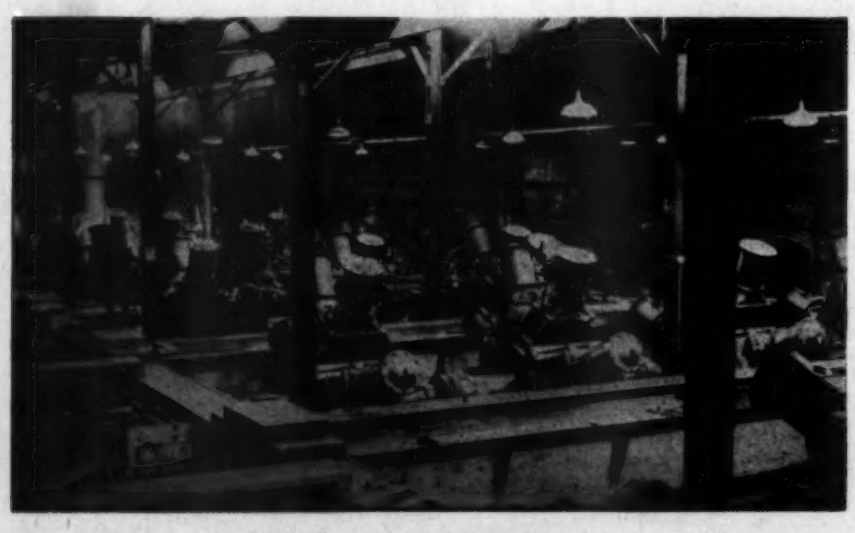


Fig. 5—General view of the grinder room

Fig. 4—One of the two General Electric steam turbine generators that supply power for operating part of the mill equipment

pneumatic deckers and thence to the sulphite storage chest.

The Mill Building

The mill building houses all the finishing process machinery, the paper machines, stock chests, and the shipping room. It has two floors, and the overall dimensions are 900 feet long by 143 feet wide, except at the raw material end, where the sulphite screen room projects an additional 125 feet. The mill is divided into five sections, the first being the sulphite and groundwood screen room, the next the decker and beater room, then the machine room, the finishing room, and, finally the train shed, or shipping room. The arrangement of the equipment in the different sections is such that what may be called the raw material in the form of groundwood and sulphite stock enters at one end, and the finished paper, rolled and wrapped for shipment, is loaded on freight cars at the other.

In the first section, the upper floor is occupied by the sulphite and groundwood screens, and by a group of 18 wet machines used in making sulphite and groundwood lap. The lower floor is occupied by a group of ten hydraulic presses and the machine shop. In connection with lap stock, it should be said here that provision has also been made for using laps, either from storage or from one of the company's other mills. This consists of a Mitts and Merrill, Timken-equipped shredder, driven by a 125 hp. induction motor and the necessary feed conveyor. The shredded material is carried to the four 2,000 lb. Pascol beaters located on the upper floor in the decker room or second section of the mill building by a bucket elevator and belt conveyor. From the beater chest it is pumped to the Bird screens in the sulphite screen room, and then goes through the same processes as the regular sulphite stock. On the other side of the upper floor are the Oliver deckers for the groundwood stock. The lower floor is mostly taken up by the groundwood storage chest and the sulphite storage chest, which are located under the deckers and beaters respectively. A unique feature here is the groundwood white water flume, to which all the mill white water, with the exception of the sulphite water, is returned, the clarified water from the Oliver deckers only being allowed to overflow to the sewer. The weir overflow is recorded and sampled.

The Machine Room

The upper floor of the machine room, a general view of which is shown in Figure 6, is occupied by the two Bagley and Sewall papermachines, at one end the mixing systems that supply them with pulp, the jordans and paper screens, and at the other, the winders and slitters for each machine. The equipment on the lower floor includes the machine chests, vacuum pumps, paper machine drive control, color and alum systems, broke beaters, stock pumps and two 1,000 cubic feet Ingersoll-Rand air compressors driven by 200 hp motors, for supplying compressed air to the paper machines, hoists and air tools, etc. The progress of the stock from the storage chests to the finishing room is as follows: From the chests it is pumped to the vats of the Trimbey mixing systems, there being one for each machine, with a capacity of 220 tons of stock per day. After being mixed, in proportions of about 75 per cent groundwood to 25 per cent sulphite, it passes to the machine chest. On the way it may be passed through the jordans if required. It is pumped from the machine chest to the stock regulator and thence to the large mixing pump in the basement to be mixed with white water from the paper machine wire pit before being delivered to the Bird Screens and paper machine head box, and thence to the fourdrinier wire. Scrap or "broke" paper goes to the three Dilts broke beaters, located under the dry end of the paper machines.

The upper floor is almost entirely taken up by the two paper machines, the mixing equipment being located on a gallery running across the room at the wet end of the machines, and the jordans being located under this gallery. The winders are located at the far end, opposite doors leading to the finishing room. The two paper machines, because of their size, and because of several novel features in their construction are one of the high spots of the whole installation. The two are almost identical in design, what variations there are being necessitated principally by the difference in size. Some idea of the latter may be obtained from their dimensions and weights; the 264 inch machine is 306 ft. overall and weighs, without the electrical equipment, 1442 tons, while the 304 inch machine is 308 feet long, and weighs 1635 tons. Both machines are driven by Canadian General Electric synchronous regulator sectional drives, and both are built for a papermaking speed of 1500 ft. per minute. Both are equipped with removable fourdriniers, of the Beloit type, with variable wire pitch, power driven. The 264-inch machine uses a wire 85 feet long, and the 304, one 90 ft. long. Both have suction couch and first press rolls, the 264 inch machine having Ingersoll-Rand and Walmsley vacuum pumps, and the 304, two 16-inch Walmsley vacuum pumps driven through Texrope drive by 225 hp. induction motors and four 12-inch pumps driven by 100 hp. motors. The bronze suction couch roll of the 304-inch machine is 44-inch in diameter and has a shell 1½-inch in thickness. On top of the suction roll is

Fig. 6—General view of the machine room, taken from the mixer gallery, showing the two Bagley and Sewall paper machines. The 304-inch machine is at the right

mounted a rubber covered presser roll. The first press has a 38-inch diameter suction press roll and a 26-inch diameter top press granite roll. The second and third bottom press rolls are 38-inch in diameter. They are rubber covered. The top rolls are 30-inch in diameter and are of granite. The press felt rolls are of heavy steel pipe, turned smooth and then rubber covered to an 18-inch diameter. The couch rolls, fourdrinier table rolls, wire rolls, wire guide rolls, dryer rolls, dryer felt rolls, press felt rolls, and the upper

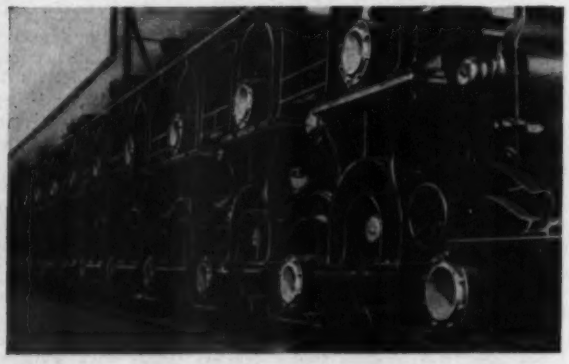


Fig. 7—Close up of the dryer section of the 304-inch machine, showing the Timken bearing mountings

press rolls are all equipped with Timken bearings, there being a total of 1072 bearings on each machine.

Because of its size, if for no other reason, some of the construction details of the 304-inch machine may be of interest. In the first place, it is a four roll machine, the width being 15 per cent greater than any hitherto built. The dryer section has 48 dryer rolls, 60 inches in diameter. In addition to the 60-inch diameter dryers there are four 48-inch felt dryers and one 36-inch receiving dryer. The 60-inch dryers are bored inside, and weigh 13 tons each. These dryers are so perfectly balanced, and so free from friction because of the Timken bearings in which they are mounted that anyone of them can be rotated by hand pressure. The dryers are driven by specially designed cut gears of small diameter, enclosed in machine finished iron casings. Because of their small diameter, the space between dryers is as clear on the back side of the machines as on the front.

The lubrication for the dryers and calender stacks is obtained by means of a Bowser forced circulator system, the oil being cooled, filtered, and circulated by apparatus located in the basement. One system is used to supply oil to the dryer roll bearings, and a second system employed for the calender stack bearings.

In the cycle of operation for the dryer roll system the oil leaves a gravity tank through a clean oil header to sight feeds placed along the top row of bearings. The oil enters the top bearings and from there gravitates to the lower bearings. From the lower bearings the oil passing through a drain pipe enters a drain header. From the drain header the oil enters the separating compartment of a receiving tank, the tank being located at the lowest point in the system. In the separating compartment any accumulated water is precipitated from the oil and the oil passing upward over a weir enters screen baskets and settling compartment where dirt and foreign particles are removed.

The clean upper strata of oil in the settling compartment is withdrawn by a circulating pump and delivered to the gravity tank again, thus completing the cycle of operation.

During the circulation of the oil another pump withdraws a portion from the front end of the settling compartment delivering it to a filter from which it gravitates back to the other end of the settling compartment to insure delivery of clean oil to the bearings.

In the calender stack system the oil leaves a gravity tank and passing through sight feeds on the top bearing, lubricates the bearing and passes out through an overflow. Leaving the overflow through a pipe leading to the center bearing below it cascades from bearing to bearing, finally entering the large main bearing at the bottom of the stack. Through the overflow on this bearing the oil drains back to a filter where it is cleaned and from which it is withdrawn and returned to the gravity tank. Any of the bearings of the calender stack may be drained by removal of a nipple in the overflow.

Steam for the dryers on both machines is supplied by the venturi circulator and separator system built by the Penberthy Injector Company. In the system on the 304-inch machine, a 14-inch supply header extends the entire length of the dryer section. The steam is supplied to the header from the turbine through three 14-inch connections—one near the dry end, one near the middle, and one near the wet end of the dryer section. This steam is regulated by means of three 14-inch Penco air operated, double piston type balanced valves. The desired pressure in the header is obtained by admitting the corresponding air pressure to the valves. Two Penco valves of the same type are installed in the relief line as a double precaution against the building up of excess pressure. An undivided drain header extends the entire length of the dryer section. Condensate is drained from the header at the wet end, and also from a point about midway of the machine. The two drains combine in a 6-inch condensate line which is reduced to a 5-inch at the pump suction. A Goulds single stage double suction type centrifugal is used for the condensate pump. The steam header is also drained from several points with the condensate passing through a continuous flow trap and discharging into the pump suction. A Penberthy No. 350 Model "G" Venturi circulator is installed in each of the 3½-inch dryer supply pipes and a Penberthy No. 260 Model "G" separator in each of the drain pipes. Both the circulators and separators are installed directly on their respective headers in the basement of the machine room. A 2-inch cross-over pipe connection between each circulator and separator provides for the recovery of steam from the drain header and circulates no steam to the dryers. The sucking action of the steam passing through the Venturi of the circulator maintains the differential of pressure necessary to remove dryer condensate and to establish steam circulation. This sucking action is transmitted to the drain header by the previously mentioned 2-inch cross-over connections. The Venturi throats in the circulator fittings are proportioned for a graduated temperature over a few dryers at both the

Fig. 8—Canadian General Electric sectional drive for the dryer rolls on the 304-inch machine

wet and dry end of the machine. This proportioning of the fittings permits the sheet to be heated gradually at the start over the dryers and to cool off slightly before it passes over the sweat dryer. The intermediate dryers are equipped with uniform throats to maintain a uniform temperature over the section of dryers served by them. The piping layout on the 264-inch machine is almost identical to that on the 304-inch machine.

The calender stack is also the largest of its kind ever built. It consists of eight chilled iron rolls, the bottom one being 36 inches in diameter, the next roll 24-inch, and the remaining six are each 20-inch. The weight of the rolls alone amounts to 150 tons, which serves as an indication of the massiveness of the stack as a whole. The winder and slitter

has a paper speed of 3,000 feet per minute, and, owing to improved design there is no vibration and the finished rolls are perfect. One of the features of the winder is a newly developed roll handling device which removes the finished rolls from the winder mechanically. The device consists essentially of a motor driven cradle which receives the finished paper roll and revolving with it through an arc of 90° rolls it out on the floor. The cradle can be set to drop the roll directly in front of the winder or give it impetus to roll several feet away. The removal of the paper roll from the winder requires about 12 seconds, and is accomplished smoothly and without physical effort on the part of the operator.

The drive of the two machines as furnished by the Canadian General Electric Company, Ltd., is precisely similar, with the exception of the motor horsepower ratings. The different sections are driven by 245 volt, 850 r.p.m. direct current variable speed motors, receiving their power from a three unit synchronous motor generator set consisting of a 2200 volt, 1375 kva. synchronous motor driving a 60 kw., 125 volt exciter and a 750/900 kw., 250/300 volt direct current generator. Each section of the machine is driven by an individual unit, consisting of a direct current, separable excited shunt wound motor mounted on a common base with a herringbone gear reducer and speed regulator. In the case of the 264-inch machine, the horsepower ratings for the different sections are; couch, 225 hp., three press sections, 100 hp. each, two dryer sections 275 hp. each, calender and reel 225 hp.

The corresponding ratings for the 304-inch machine are, couch, 275 hp., three presses, 125 hp. each, two dryers 325 hp. each, calender and reel, 325 hp. On neither machine are there any gear reducers or speed regulators used in connection with the dryer sections, as the gearing is inherent in the machine itself and the dryers are used as a master. The motors are mounted directly in the back line shaft of the dryers, and power is transmitted to the dryer rolls by a series of six indriving shafts, three to each section, through bevel gears, the gear and pinion shafts being mounted in Timken bearings.

The machines are equipped with full automatic push button control by means of the push button stations mounted on the front side of the machine. The control provides "slow" "jog" "speed up" and "slow down", as well as a remote control draw adjustment, the section motors being automatically connected to the tie-in bus when the machine has come up to speed. Each section motor is individually controlled by means of a full automatic contactor control panel forming a part of the unit switchboard. Speed regulation is accomplished by the synchronous regulator system developed for paper machines by the General Electric Company. The master alternator that furnishes power to the "tie-in" bus is driven from the dryer section.

Since these machines have been put into operation, several interesting facts have developed concerning their performance characteristics, especially with regard to the effect of the bearings on the power demand. For instance it was found, in the case of the 264-inch machine, that the average power required during acceleration of the dryer sections was 15 to 20 per cent less than that taken for a plain bearing machine of approximately the same size. The break out power required by the dryer section showed a ratio of about 4=1 in favor of the roller bearing machine. To give concrete figures, the 264-inch machine dryers took an average power during acceleration of 234 kw. at 200 volts, and the break out demand peak was 106 hp. In the case of the 304-inch machine, the initial power required to turn the dryer section over for the first time was in the neighborhood of 45 hp. The apparent discrepancy between the demand of the two machines is due to the fact that the 304-inch machine was started without clothing. So far no figures showing integrated power demand are available, but to judge from the performance during acceleration it is probably not too much to predict that there should be an overall power saving of at least 15 to 20 per cent over a plain bearing machine of corresponding size. In any event, the results show that the Timken bearings effect material improvements in the operating charactertistics of the machines as a whole.

Finishing and Shipping

The finished rolls from the paper machine are rolled by hand to the finishing room, where they are weighed, rewound if necessary, and wrapped for shipment. The equipment in this room includes two transfer platforms, two 2000 lb. scales mounted with heading machines on movable trucks, and a 10 ton steam-hydraulic elevator. The lower floor of this section is occupied by storage facilities of various sorts, such as racks for roll cores, spare parts for the paper and other machines, mill supplies, etc. Rolls are handled from the finishing room to the train shed immediately adjoining by two Elwell-Parker Electric storage battery trucks, specially designed for handling newsprint rolls. The train shed is served by four spur tracks, separated by platforms of standard loading car height. The shed will accommodate sixteen standard freight cars at a time, so that loading can be carried on with considerable rapidity. A conveyor is being provided to transport the finished rolls from the finishing room to a warehouse on the dock, where lake steamers can load for lake port deliveries.

Heritage Leaves Forest Products Laboratory

Clark C. Heritage, chemical engineer in charge of the section of Pulp and Paper of the Forest Products Laboratory, left the laboratory July 18 to join the technical staff of the Oxford Paper Co. at Rumford Falls, Me.

Mr. Heritage, who has been in the pulp and paper industry and allied fields since 1914, became connected with the Forest Products Laboratory in October, 1927, with an impressive record in development work in the pulp and paper and chemical fields. During the war period and up to 1925, he was engaged in engineering and development work for the Schoellkopf Aniline and Chemical Works and the National Aniline and Chemical Co. in Buffalo, N. Y.

During Mr. Heritage's administration of the federal laboratory's pulp and paper section, outstanding research accomplishments have included the production of papers of commercial grade from little-used hardwoods by the sulphite and semi-chemical processes, and from the pines through easy bleaching sulphate, the production of high yield semi-sulphite papers, the utilization of seed flax straw for high quality strong, white papers, and new additional methods for evaluating groundwood pulps.

Scouts and Forestry

A bulletin issued by the New York State College of Forestry, Syracuse University, brings out the connection between forestry and scouting. More and more scouting revolves around life in the forests and the things that have to do with trees; more than ever scouts are paying attention to forest conservation.

One of the great problems in scouting today is the location of scout camps in convenient forested areas sufficiently extensive to provide wide range and variety of camping. The disappearance of the forest has become so general that there is more difficulty than might be imagined in finding such campsites. Scouting is growing away from mass organization near the city and resolving itself into smaller units so the individual boy may come in closer contact with his leaders and obtain isolation in the forest. Scouts are taught to protect trees and this influence exerted over nearly a million boys in America is bound to result in building up a strong sentiment for forestry in the future. It would be rare to find a scout troop that had not learned how to plant a tree. Most of them have done actual reforesting work and have learned how to be careful in the use of fire in the woods.

Many scouts are registered as forest guides and they often co-operate with the state and federal Forest Service officers in putting out fires and carrying on public education in forestry. In the national forest, land is leased to scouts who desire to camp, and instructors from the Forest Service give talks at troop meetings and in some places scouts are appointed fire wardens.

A Southern Paper Mill Laboratory

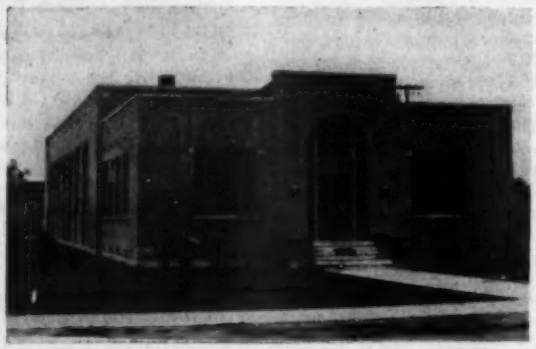
Bogalusa Paper Co., Inc., Operates Experimental Pulp and Paper Mill on Semi-Commercial Basis

By HARRY E. WESTON
Staff Representative

THE keynote of modern industry is standardization and research. Research aids in standardization and has been responsible for many important advances in industry. The Bogalusa Paper Co., Inc., Bogalusa, Louisiana, appreciating the value of research in its program of activity, has caused a laboratory to be erected and placed into operation for the purpose of studying problems peculiar to its own business.

The laboratory is housed in a very pretty one-story brick building located near the main entrance to the plant. A spacious lawn together with the type of building construction sets the laboratory off as a place for study and scientific activity. It has all the earmarks of an institution designed for the very purpose.

Upon entering the main door of the laboratory one notices to the left the pleasant office of the general manager who also acts as director of research. To the right of the main entrance is the library, well supplied with technological books to aid the scientific worker in his search for truth. Here the investigator is able to obtain published data in an atmosphere productive of scientific thought. A good library is one of the primary essentials for scientific research.



Exterior view of Bogalusa Paper Co. laboratory

Immediately adjoining the library, on the same side of the building, is the office of the research chemist, laid out in such a way that his co-workers may come for counsel and advice.

For the most part, the rest of the building is given over to laboratories which include a constant humidity room, two chemical laboratories, a pulp testing laboratory, and a semi-commercial pulp and paper plant.

Several novel ideas have been incorporated in the design of the constant humidity room. Double glass partitions, for example, are placed in the wall area of two sides of the room to permit viewing of operators from the outside and to permit operators to view outside activities. Likewise, both natural and artificial illumination are employed for lighting. When artificial illumination is desired, it is obtained from a row of flood lights located outside the window with the light rays penetrating the room in the same way as daylight. Such a lighting arrangement does not affect humidity control. The room is maintained at a temperature of 70° Fahr. and a relative humidity of 65° through the use of Carrier control equipment and a York ice machine. The ice machine has a capacity of 600 pounds of ice per 24 hours. A Tycos wet and dry bulb hygrometer makes a permanent record of the temperature and humidity conditions of the room.

The constant humidity room is used for the physical testing of paper. On specially designed benches within the room are located the testing instruments. These instruments include a Schopper, Mullen and Elmendorf tester, as well as a Carson curl tester and an Abrams penescope. In addition to the instruments mentioned are balances and other equipment common to a paper testing laboratory.

Each of the two chemical laboratories are equipped with Wiese laboratory furniture and a Schwartz cabinet. In addition to the laboratory benches are hoods and tables to permit work upon any problem within the scope of the laboratory.

The pulp testing laboratory, located to the rear and on one side of the building, houses a Williams moisture testing oven, an International Equipment Co. centrifuge, an Allis-Chalmers 5 ft. x 9 ft. rod mill, one pound Valley Iron Works beater, and sheet making equipment including a Hymac press, a Green's freeness tester, and a sheet machine. Special provision has also been made in this laboratory for setting up fractional distillation apparatus whenever problems demand the use of such equipment.

A large part of the building is given over to the semi-commercial paper laboratory. The major equipment of this laboratory consists of two Dilts 100-pound beaters, one of them being the new high speed type, one commercial size Horne jordan, and a Pussy and Jones 39" combination fourdrinier and cylinder paper machine.

The beaters are located on a mezzanine floor which is placed to the rear of the laboratory and above the wet end of the experimental paper machine. The jordan has been installed in the same room as the rod mill. Several stock chests

Library in laboratory building

Chemical laboratory

Constant humidity room (for paper testing)

have been also included in the laboratory arrangement.

The paper machine screen located just ahead of the head box is a four plate diaphragm screen of standard construction. The cuts of the plates commonly used range from .020-inch to .025-inch.

The Pusey and Jones machine has a fourdinier part designed for a wire 39 inches wide and 35 feet long. The cylinder part, located in the basement, has been designed for a mold 24 inches in diameter with a 38-inch face.

The press part of the machine consists of two presses—top rolls being gun metal cased while the lower rolls are rubber covered. The dryer section comprises nine 24-inch dryers and one Yankee 60-inch dryer. The Yankee dryer is located at the dry end of the section. A six roll stack of calenders, a two-drum upright reel, and a single shaft winder make up the rest of the machine.

The driving arrangement, of five separate units, is of the cone pulley worm gear type. Each unit, mounted on a self-contained bed plate, includes a cone pulley and belt shifter, a friction clutch, and a worm gear reduction unit.

The driving mechanism for the machine is driven by an electric motor which permits a speed range on the machine from 30 to 150 feet per minute.

The semi-commercial unit, including beaters, jordan, and paper machine are operated night and day, and produce about 4 tons daily.

The experimental pulp mill is located in a separate building a little way from the research laboratory. This mill is equipped with a digester, two diffusers, stock chest, screen, thickener, and wet machine. The digester has a capacity of 125 cubic feet and has been designed for 125 pound working pressure. Likewise, it may be operated as a tumbling or vertical unit is equipped for indirect heating. The stock from the digester is blown through a cyclone into one of the two diffusers. The diffusers are designed to permit a study of different methods of washing stock.

The diffusers dump the pulp into a stock chest from which it is pumped to a six plate 33-cut Packer screen. From the screen the stock runs over a thickener where part of the water is removed. The thickened pulp is then passed to a wet machine where it is collected in the form of laps and transported to the semi-commercial paper mill. The wet machine is a 54-inch press unit.

Two other items of pulp mill equipment not heretofore mentioned are a kollergang and a Wiener refiner. This equipment is used to process screenings and in installed to function flexibly.

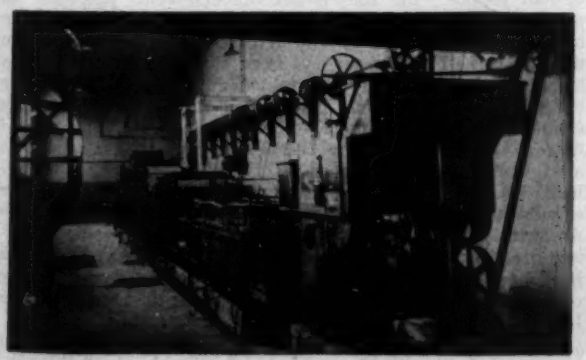
The entire experimental pulp and paper plant operates principally on specialty papers with the primary purpose of developing a better sheet than is being made commercially. In this way, a few tons of paper can be made, placed on the market, and if found satisfactory produced on the regular kraft of board machines.

Paper Investigations by Bureau of Standards

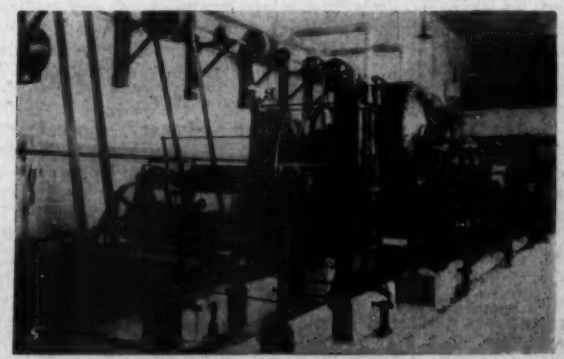
Storage of Conditioned Paper—Tests were made to confirm the validity of the practice of storing test samples of conditioned paper in air-tight containers over night. Owing to the relatively much larger amount of moisture in paper than in the surrounding air, there can be little disturbance of the moisture content of paper if it is put in air-tight vessels so that there are 10 grams or more of paper for each liter of air, even though the temperature and humidity outside of the vessel change considerably. The tests indicated that the paper remains substantially as conditioned when stored under the above conditions through the ordinary changes of the outside air in temperature and humidity.

Bureau of Standards Papers for Commerce Building Corner Stone—Two of the Bureau of Standards paper mill products were selected by the bureau officials for inclusion in a six-page booklet, descriptive of the bureau and its accomplishments, placed in the cornerstone of the new Department of Commerce building. The papers selected are currency paper, composed of linen and cotton rag fibers, and paper made from purified wood fibers. The first represents the new type of currency paper developed by the paper section of the bureau, and adopted as the standard currency paper by the Treasury Department, because of its durability. The purified wood fibers used in making the other specimen of paper are a commercial product. The paper that was made from them is equal in quality to certain kinds of papers made from high-grade rags, and therefore is representative of a most important commercial development in papermaking fibers—the production of high grade fibers from low grade fibrous materials. The paper specimens contained typed descriptions of them.

The reorganization of The Kalbfleisch Corporation with American Cyanamid Company through the consolidation of the assets of The Kalbfleisch Corporation with the assets of American Cyanamid Company which was heretofore recommended by the Boards of Directors of each corporation has now been ratified by the Stockholders of the respective companies. It is planned to have the reorganization completed before the end of July and The Kalbfleisch Corporation will continue to operate as a separate organization and no change in management is contemplated.



Experimental paper machine, wet end



Experimental paper machine, dry end

The Growth of Canada's Pulp and Paper Industry

By J. B. M. CLARK

THE growth of the pulp and paper industry in Canada in the course of the last few years has been nothing short of phenominal, and on account of cheaper labor, abundant water power, and plentiful supplies of suitable timber the Dominion is more and more taking the place of the United States as the world's chief supplier of newsprint. At the Annual Meeting of the Newsprint Service Bureau held in Montreal in January, 1927, Mr. R. S. Kellogg, Secretary of the Bureau, in announcing that Canadian production, for 1926 had surpassed that of American mills by 195,000 tons, declared that Canada had assumed world leadership in the manufacture of newsprint, a statement which subsequent figures amply confirm. The ratio of increase in Canada's favor has been mounting steadily ever since, production returns to the end of 1928 showing that Canadian mills have turned out 2,381,102 tons as compared with a production of 1,414,952 tons in American mills. In other words an increase of approximately 11 percent has grown in a couple of years to one of more than 60 percent.

But if the exigencies of manufacturing are inducing newsprint manufacturers more and more to establish themselves in Canada, there is no mistake about whose ever-growing needs these Canadian mills are called on to supply and who the buyer is whose demands are so largely responsible for Canada's present gigantic output, for the extensions that are so constantly being made to existing mills, and for the continual building of new ones. In 1926, the United States used something like 3,500,000 tons of newsprint, which equals 58 lbs. per capita, or 56 percent of the total world consumption. In this total was included 88 percent of the production of Canadian mills. Canada is in rapid progress of becoming Uncle Sam's principal source of supply for this product, even as the United States is the Dominion's most important customer for its sale.

Most of the prosperous Canadian mills are situated in Eastern Canada in the Provinces of Quebec and Ontario, which, combining as they do great stretches of suitable timber, abundant water power, cheap labor, and relatively easy access to the teeming cities of the Eastern States, are thereby rendered almost ideal venues for the purpose. This is particularly true of the Province of Quebec. The French-Canadian habitant has proved to be a most adaptable person for the needs of the industry, whether as a woodsman cutting and driving logs in the forests or as a paper machine tender in the mills. As a body, French-Canadians are possibly less susceptible to the labor agitator than any other workmen on this continent. To a certain extent of course they are organized, and the leaven of the press and the cinema are working their inevitable effect upon them. But even so there is little immediate prospect of any radical departure from their traditional policy of obedience to those in authority, so powerful are the influences, clerical and otherwise, to which they have been so long subjected.

Status of Industry in 1927

Although at the time of writing (February) the industry is suffering from a depression brought about by over-production, and Canadian mills are only operating at 78 percent of rated capacity, the growth recorded in the last few years has been remarkable. The gross value of production in 1923 was $184,414,675, while in 1927 it had risen to $219,329,763. There were 113 mills in operation in Canada in 1927, of which 41 made pulp only, 42 were combined pulp and paper mills, and 30 made paper only. 2,468,961 tons of paper were produced in that year, 84.4 percent which was newsprint, and 876,904 tons of wood pulp exported. The total capital invested in the manufacturing part of the industry in the year 1927 had reached the enormous total of $579,853,552 (including only mills in actual operation), the total number of employees on salaries and wages was 32,876, and the total payroll $45,674,293. The gross contribution of the industry towards the country's favorable trade balance for 1927 amounted to nearly $180,000,000.

Developments on St. Maurice River

A typical power stream of the kind that flows so freely from the Laurentian Plateau in Eastern and Central Canada, and one which has played a large part in developing successful newsprint mills, is the St. Maurice, a tributary of the St. Lawrence, which flows into that river at the town of Three Rivers in the Province of Quebec, midway between Montreal and Quebec City. The general influence of this stream on the industrial prosperity of the Province has been very great, and the industries situated on its banks have made rapid and outstanding progress. There are pulp and paper mills at Three Rivers, Cap Madeleine, Shawinigan Falls, and Grandmere which produce in the neighborhood of 2600 tons of paper per day, or 30 percent of the installed capacity of newsprint mills in all Canada. Their power requirements are something like 200,000 horsepower. In addition to supplying a further 90,000 horsepower for the needs of other industries on its banks, the St. Maurice furnishes other 100,000 horsepower for distribution to the city of Montreal and surrounding territory. From a beginning in 1902 with units capable of delivering 5000 horsepower, there are today turbine generator sets delivering 45,000 horsepower, and the power houses at Shawinigan Falls, Grandmere, and La Gabelle are capable of delivering over 550,000 horsepower. In addition to these huge totals there is said to be approximately 150,000 horspower yet available at this point. All this power is concentrated in a 12-mile stretch of the river which falls 250 feet in this distance. Moreover there is still something like 80 miles of unharnessed rapids in this wonderful stream from which it is stimated 600,000 horsepower can be developed, and plans are said to be under way for bringing this about. According to press reports if the power developed really reaches 600,000 horsepower it will call for an expenditure of not less than $150,000,000.

What the development of this stream has meant to the Province will be understood when it is stated that the town of Three Rivers had at the beginning of the present century a population of less than 10,000 people. In the decade 1901-1911 it increased its population by nearly 40 percent, and today has a population of 35,000. The growth has also been rapid at Shawinigan Falls and Grandmere, and the lower St. Maurice Valley has now a total urban population of 60,000 people. If the power development proceeds as planned, the population within the next few decades can hardly fail to increase by two or three times. Although the natural fall of the river has been largely instrumental in bringing about this rapid development, the part played by the provincial authorities in erecting suitable control works should not be overlooked. The Goudin Dam, the second largest artificial reservoir in the world (exceeding only in a slight degree by the Gatun reservoir of the Panama Canal) holds back 160 billion cubic feet of water, and with its other regulating dams on the Manouan River (a tributary of the St. Maurice) the Quebec Streams Commission is now regulating the discharge of 16,500 cubic feet per second. What has been done on the St. Maurice River is being duplicated on other Canadian streams by the Provincial and Dominion Governments.

The growth of population on the North American continent keeps going steadily forward and inevitably results in the creation of new cities, a condition that automatically sets

up a demand for more newspapers. The spread of education still further accentuates the need. The circulation of English newspapers in the United States now amounts to over 36 million copies per day. The average size of Sunday newspapers in the class of 100,000 circulation and over increased from 79 pages in 1920 to 111 pages in 1926, while the daily issues increased from 23 pages to 31 pages on the average in the same period.

As is perhaps natural, in view of the great increase in consumption of pulpwood, the cry of forest conservation is beginning to be heard in Canada. With the example of the United States before then, whose forests are now so largely denuded of softwood for pulp making through unregulated cutting and lack of proper reforestation, Canadian forestry men and experts are alarmed lest the forest resources of the Dominion be simplarly brought to the point of exhaustion. The forests actually leased in the Province of Quebec, according to comparatively recent Forestry Service estimates, total 46,000,000 acres, and those still unleased 76,500,000 acres. These, with a balance of 7,500,000 acres devoted to private forests, colonization lots, and township reserves, make up a total of 130,000,000 acres and comprise the entire productive area of the Province. When allowance is made for stands of timber not available, those too remote to be operated economically, and those wooded with trees used for other purposes than the manufacture of pulp, and the losses by fire and insect pests taken into consideration, figures that began by appearing enormous assume more modest dimensions. In the course of his address at the fifteenth annual meeting of the Canadian Pulp & Paper Association, Woodlands Section, held in Montreal at the beginning of 1928, Dr. C. D. Howe, Dean of the Faculty of Forestry, University of Toronto, said he had come to the conclusion that on the average the actual cut-over areas had not yielded more than six cords per acre of spruce and balsam for pulpwood, that such a yield was low, and in addition distressingly slow. It took Nature, he said, at least 100 years to produce the six cords of pulpwood on the average acre, whereas man could increase this yield manyfold, and could, by proper methods, eventually produce five or six times as much wood in half the time.

The available spruce and balsam in Eastern Canada, he estimated, amounted to 270,000,000 cords. At the present rate of cutting, namely 6,000,000 cords per year, this would last 45 years. The rate of depletion by cutting, which kept increasing steadily, would, he thought, continue to increase at an accelerated pace for some time to come, with a consequent ultimate exhaustion of the supply, which, whether it took place twenty years or fotry years from now, would be an economic diaster of the first magnitude. There could be little doubt of such a final outcome, he asserted, unless vigorous recouperative measures were put into practice both in Ontario and Quebec, which between them contributed over 80 percent of all the pulpwood cut.

Dr. Howe considered it quite possible, with the adoption of proper cutting methods, to keep timber limits fully stocked with young growth of the desired species, thus leading to successive periodic crops and making the forests continuously productive. In the development of this regenerative process, coupled with an adequate program of planting, lay the solution of the problem.

That the question of wood losses by fire is being energetically tackled seems evident from the fact that forest fire losses in Canada during 1927 were the lowest on record. 3766 fires were reported in all which burned over an area of 481,373 acres, with a money loss of $1,396,055. This record only represents about 20 percent of the loss suffered during 1926, while the average for the five-year period 1923 to 1927 was 2,380,416 acres with an average gross value of $11,745,885. The losses in the year 1923 were exceptional, amounting to over $40,000,000, the average for the last four years of the period being $4,463,995. The decrease in 1927 will thus be seen to be very marked, largely due to improved protective organization in which the aeroplane (and hydroplane) played an important part. 10 percent of the reported fires were of railroad origin; but such were responsible for less than 1 percent of the total loss.

Forest Taxation to Be Discussed

Governor Franklin D. Roosevelt's recent appointment of Franklin Moon, dean of the New York State College of Forestry at Syracuse University, as a delegate to represent the State of New York at the 22nd annual conference of the National Tax Association at Saranac Lake, N. Y., September 9-13 is an indication of the importance that forest taxation occupies today in the general tax problem.

Dean Moon, who, by virtue of his position as head of the Forestry College at Syracuse, is in touch with forest taxation in New York as well as other sections of the United States. The appointment of foresters to attend the conference is an indication that Governor Roosevelt considers this phase of taxation in its true importance as an economic factor. Many laws have been passed in New York tending to relieve the burden of taxation on the owner of forests, particularly as an inducement to reforestation and the scientific growing of forest crops, but it appears that no satisfactory measure, thus far, has been devised. Various agencies and investigators have devoted considerable time and money to the subject without producing any adequate system for taxing growing forests.

The Federal Government is deeply concerned in this matter. Under the Clark-McAry Act, the forest taxation problem is being investigated, but the field is so extensive and varying factors so numerous that the work will require a number of years. It is believed in many quarters that the tax on forest land, as it is administered at present, is one of the great obstacles to the application of scientific forestry in this country. The appointment of foresters to participate in the annual conference of the National Tax Association is assurance that this matter will be given due consideration looking toward the final solution of the problem.

Cornstalk Products Co. to Enter South

The Cornstalk Products Co., which has pioneered at Danville, Ill., the commercial manufacture of pulp and chemical products from farm waste fibres, including cornstalks, bagasse, rice straw and cottonseed hulls, has announced that it is preparing to build this year at least two mills in the South for the manufacture of chemical pulp from rice straw and bagasse.

Many attempts have been made to produce commercially a satisfactory quality of chemical pulp from bagasse. The process perfected at Danville produces a high alpha cellulose which can be used either by the chemical cellulose manufacturer or the papermaker.

Clarence A. Brown, who recently resigned as executive vice president of the Kelly-Springfield Tire Co., to become president of the Cornstalk Products Co., has just returned from an inspection trip through the Texas-Louisiana area and the company is sending engineering and traffic men who will be engaged during the next few weeks looking into details of locations for rice straw and bagasse plants. Fred C. Green, plant manager at Danville, is in charge of this investigation.

Several hundred thousand dollars have been spent during June and July in extensions to the Danville pulp mill, including a 2,000 hp. boiler installation and a chemical by-product recovery plan. Carbon black of a very high grade will be the first by-product to be marketed.

The executive offices of the company have been moved from 42 Broadway to No. 10 East 40th Street, New York City.

Lansing Joins Noble & Wood

Eugene H. Lansing, for many years a familiar figure in the paper industry through his practical methods and devices for cleaning and preserving paper machine felts, has joined The Noble & Wood Machine Company of Hoosick Falls, N. Y.

It is reported that the purpose of Mr. Lansing's association with this company is the development, manufacture and marketing of a new improved felt washer, details of which will soon be announced. It is understood that this new washer will incorporate several unusual features and will mark a distinct advance over any similar device now in use.

Time as a Cost Factor in the Paper Industry[1]

By THOMAS J. BURKE

Secretary-Treasurer of the Cost Association of the Paper Industry

MY thought in choosing this topic had something to do with the fact that last month I gave an address in Springfield on the subject of "Capacity and Costs", and in that address made the suggestion that all paper mills should adopt a 6600 hour year. The importance of this lies in the fact, which is common knowledge, that in our industry we have a large investment in fixed assets, and consequently a big depreciation item and other fixed costs which are distributed on a time basis rather than a use factor. In this previous address, I pointed out the differences that arise as a result of different mills figuring all the way from 6000 hours per annum to 7440 hours per annum. We find there is a difference of 24 per cent between 6600 hours and 7440 hours, which is an item worth considering when you remember that what we are really selling is the time of our paper machines. In this connection, I might mention here that there are a number of our leading executives, (and I call to mind at this moment particularly Mr. D. Clark Everest), who insist upon having in their cost sheets a column specifying the profit per hour, as well as the profit per ton. This, of course, is an important figure and one that should be closely followed:

Depreciation

I would like to touch on the harrowed subject of "Depreciation" for a few minutes, because after a study of the returns sent in to me in response to the questionnaire sent out last year asking for information on this subject, it seemed quite clear that before anything could be done in an effort to draw up a standard set of depreciation rates for use in our industry, (even providing we were to allow as suggested by the Commissioner of Internal Revenue a variation of one fifth below or above such rates), it would be necessary for us to do a good deal of educational work in order that a substantial agreement might be reached by a large majority of the mills in our industry. Circumstances alter cases, and they certainly do as regards the rate of depreciation we should allow on our machinery and equipment. I don't say buildings, because with but few exceptions there seems to be a substantial agreement as to depreciation in this connection, namely, 2 per cent or 3 per cent on cement, brick or mill type buildings, and 4 per cent to 5 per cent on frame or wood buildings of various kinds. In any event, the range is not wide, and personally I believe there would not be a great deal of difficulty in reaching an agreement about buildings. The variation of one fifth above or below the rate would very nearly take care of the rate differences now existing, but when we get into the "rate" question for machinery and equipment, we find very large differences. It is impossible for me to read you a list of these different rates, and I don't think that you are particularly anxious to hear them. Of course, the fact is, that we should all know exactly how we have spent the funds invested in our fixed assets. It's strange that the importance of this is not more generally recognized. Keeping a plant ledger is essential, in my opinion, to good business practice. To do this satisfactorily not only requires that when the expenditures are made they should be passed on by a competent engineer and dealt with by a competent accountant so that they may be charged to the proper accounts, but involves the necessity for giving similar attention to all later expenditures made for these items. In other words, it requires a follow-up system, so that those expenditures which should be capitalized are not charged to expense, and vice versa. Sometimes it is extremely difficult to decide just how much shall be capitalized and how much shall be charged to expense.

In dealing with such problems, the accountant as we have so often discussed and explained, should set up a plant ledger dividing the items into the different departments, also separating them according to machine, kind of equipment, etc. After this is done, we know just how much is invested in each department, each kind of machine, and each kind of equipment. We can then apply the various rates of depreciation for the different machines and equipment, and charge the different departments with their pro rata share of this depreciation monthly, or by four weekly periods, if you prefer.

Now time is a very hard taskmaster at best, and none of us can turn back the hands of the clock, unless we have put them forward as in daylight saving. Every day that passes means that a certain value has gone out of your mill whether the machines have been running or not. In fact, I am in some doubt as to whether there is a very large difference between the amount that should be written off for depreciation when a mill is running or when it is shut-down. We are living in a speedy age, and to make a profit you have to keep up with the procession, so that even if we shut a mill down, while the machinery and equipment may have been taken good care of during the shut-down, just so much time has been wasted in the life of that equipment, and it is just that much behind the procession. I might mention in this connection, a talk I had recently with the president of a large company which is charging 10 per cent depreciation annually on its machinery and equipment. I asked about this, saying that it appeared to be rather a high rate in comparison with many others I had seen. This gentleman told me that in his opinion by charging less than this rate these mills were losing out just so much in the race for progress and profits. He told me that he believed he was correct in stating that there was practically no machinery or equipment in their mill that was over ten years old, although the mill has been in existence for a number of years. He said they are constantly improving their machinery and equipment whenever they feel it is necessary to make a change, in order to give the best possible service to the public, and to supply them with paper at the lowest practical price possible consistent with fair profits to themselves. He stressed this latter condition and lives up to it. So I bring you this message on depreciation.

Possibly many of us have been fooling ourselves on this matter. Personally, I have felt that if we are going to charge depreciation on a blanket or "over-all" rate, as so many mills do, that 6 2/3 per cent, which contemplates a 15 year life, or 7½ per cent, which contemplates between 13 and 14 years' life, would be a fair rate. However, I bring this point to you for discussion, and should be glad to have your opinion about it. As I said before, time passes and our working tools get out of date and thus depreciate just as much in value as if they were worn out. In our arguments with the Government officials we ought to place more stress on this point, that while a machine may be in good running repair, it may be of little use because of the fact that it is too costly to run under present competitive conditions.

Thirteen Month Calendar

Those of you who attended the February convention will remember the address given by Seth Bush on this subject, and following this address, the American Paper & Pulp Association passed a resolution in favor of this country being represented at any conference that might be called to study the possibilities of the adoption of an International fixed calendar of 13 months. You probably know that there are a fair number of paper mills that have been working on the basis of 13 four weekly periods, for some years. I believe this is the best basis for cost and statistical purposes, and therefore that an address on the subject chosen, should contain a reference to this matter. Whether this calendar is adopted or not, I would like to see all mills adopt this principle of 13 four weekly periods for accounting and statistical purposes. I mentioned above the suggestion previously made, that we should standardize on a 6600 hour year. I did not, however, mention the fact that in my address I suggested the industry should adopt the policy of "No Sunday work", and shut down the last two hours on Saturday for making the repairs usually carried out on Sunday. This would give five complete days of 24 hours and one

[1]Address given at Park-American Hotel, Kalamazoo, Mich., on May 17th, 1929, at Interstate Meeting of Kalamazoo Division of Cost Association of the Paper Industry and the Paper Technologists Club, of Kalamazoo.

ADVERTISING PAGES REMOVED

eight hour on Saturday, or 128 hours in all, which would be 512 hours for each "four weekly period", or 6656 hours per annum (13 periods). I hardly think it necessary for us to consider the odd 56 hours when using this number of hours as a divisor for distributing our fixed overhead costs, and that we could very well use 6600 hours for this purpose, particularly as no allowance has been made for legal holidays or forced shut-downs for any cause whatsoever.

Perhaps some of you will receive these suggestions with some doubt, but I would like to point out, that this is an age of standardization, and if we standardize on these principles or policies the closer together we shall get in arriving at accurate costs. I realize perfectly well, that these are suggestions that would have to be passed on by your executives before you could put them into practice. May I make the suggestion that you discuss the idea with them, for I would like to see this subject brought out in the various trade associations with the hope that possibly they would pass resolutions putting them into effect. It certainly would be beneficial for our industry, for it seems to me only reasonable to suggest that an industry which runs for 24 hours continually, should be in a position to have one complete day of rest, and I believe that there would be no great objection to it, if everybody would agree to adopt this policy or "no Sunday work". As our friend Einstein says, "It's all a question of relativity", and if everybody is doing the same thing, nobody will object. Sixteen hours, which is the number of hours I suggest should be cut off the working week of 144 hours, is approximately 11 per cent. Since we have a surplus productive capacity of more than 20 per cent in every grade in the industry, we shall still have a surplus productive capacity on this basis of approximately 10 per cent or more, which is what every healthy industry requires, to allow for the annual increase which normally takes place in the use of its product, and to permit a healthy competitive condition. We are at present, therefore, in a sound condition to adopt a policy which should have a good effect on our labor turnover conditions, which just now are somewhat above the average for labor in this country.

Turnovers

In considering time as a cost factor, we might very well give some consideration to the various turnovers. Take, for instance, the question of the relation of sales to net worth. I think it is a fair statement to make, that as a rule our annual net sales run from 100 per cent to 150 per cent of our net worth. Time is, therefore, an important factor in this turnover if we are to make a fair profit on our investment. Apparently it is not possible to improve the turnover by increasing sales, except at an exorbitant selling expense, which more than offsets any gains in production costs. The improvements must come then by decreasing the size of our inventories, so that our inventory turnovers may become more rapid. Another point to be considered in this connection is, of course, the fact that large inventories undoubtedly have a depressing effect on prices. They are usually caused by a desire to keep the mill running at a time when business is slack, for undoubtedly it is an expensive matter to shut a mill down completely. However, a good deal can be done by budgeting production in accordance with estimated demand, so that while inventories are built up in slack times, they are depleted during busy times. In other words, production is so arranged that by working on a certain prearranged percentage the mill is ready at all times to meet sales requirements, but is never largely over-stocked. Seasonal variations, of course, enter into these calculations, and it it only by constant effort that such a program can be satisfactorily carried out.

Cash Discounts

While I am talking of sales, I would like to again bring up a topic which we have previously discussed—namely, the "Cash Discounts" allowed our customers, and which undoubtedly play an important part as a cost factor in our industry and are related to time. It is certainly difficult to explain why some grades should allow 3 per cent 10 days, net 30, while others allow 2 per cent and 1 per cent. The latter—1 per cent 10 days, net 30—representing as it does a rate of 18 per cent per annum, would appear to be a very reasonable allowance for this purpose, and personally I would like to see an effort made to bring about the adoption of this rate as a universal pratice in the industry. 3 per cent 10 days, net 30, represents a rate of 54 per cent per annum, on the basis that by paying 20 days before payment must be made, 3 per cent may be deducted from the invoice; 20 days is an 18th part of 360 days, and multiplying 3 per cent by 18 you arrive at a rate of 54 per cent. Of course, in this connection there is a point to be considered that perhaps some of our customers do not pay at the end of 30 days. If this is at all general, you could not state that the rate we are allowing is 54 per cent per annum, and this brings up another point which might be of interest—namely, that I do not believe there are any great number of mills in our industry that make it a practice to put on their invoices a statement to the effect that interest at 6 per cent per annum will be added to all invoices not paid within thirty days from date. I think this is a fair practice which might be universally adopted.

Standard Costs

Without trespassing on Mr. Davy's territory, I want to say a few words about "standard costs", merely as an endorsement of the importance of the subject on which he is to speak later. I am heartily in favor of time studies, but I am just as certain that unless these studies are undertaken by a trained man and with the co-operation of the personnel, they are just as likely to do more harm than good. With our large investments in machinery and equipment, it is essential that the best possible use shall be made of every hour. In this connection, have you ever thought of making up a calendar on the following basis? Suppose your sales last year were a million dollars, that you made a net profit of $100,000, and that you ran 6600 hours and worked on a 13 four weekly period basis. Supposing we put everything on a time basis and figure our cost and expenses were as follows:

1—Manufacturing Materials and Supplies	$510,000
2—Manufacturing Wages and Salaries	130,000
3—Insurance, Depreciation and other General Expenses	52,000
4—Office and Administrative Expense	42,000
5—Power Materials and Supplies	48,000
6—Selling Expenses including advertising	38,000
7—Repair Materials and Supplies	28,000
8—Purchased Power	16,000
9—Power Plant Service, Wages and Salaries	14,000
10—Repair Wages and Salaries	12,000
11—State and Local Taxes	10,000
	$900,000

Now if during that 6600 hours we produced goods which sold for a million dollars, how long were we working for profit and how long were we working to make our expenses?

Assuming we had all our materials and supplies on hand at the beginning of the year, we worked from January 1st to "Sol" 17th to recover amount spent for manufacturing materials and supplies. "Sol" by the way is one suggested name for the extra month which under the International Fixed Calendar plan will be inserted between June and July. Thus we shall work for 6½ months (of 28 days each) to recover the amount paid out for these necessities. Putting it that way does make one realize what an important item these materials and supplies are; it focuses attention on the necessity for conserving them; it brings out the value of the work Mr. C. M. Baker is doing in getting at the facts relating to "white water wastes", or, in fact, all wastes in their use.

Perhaps, I should explain here that these figures are based on actual average percentages collected for the first half of 1928. I have not picked them out of the air. Some mills' percentages are below 50 per cent of the total cost for raw materials and supplies, but very few, and I believe you'll find if you later check up on these figures they will not be far different from your own. Thus after working a little over 6½ of our 13 four week periods we have got back in our treasury the amount we expended for raw materials and supplies for the year's operations. After working on to August 9th, another six weeks and 90 hours, we have received sufficient to pay our manufacturing wages and salaries for the year. Those are the two outstanding large items and probably the two in which there are the greatest

20 HYATT ROLLER BEARINGS

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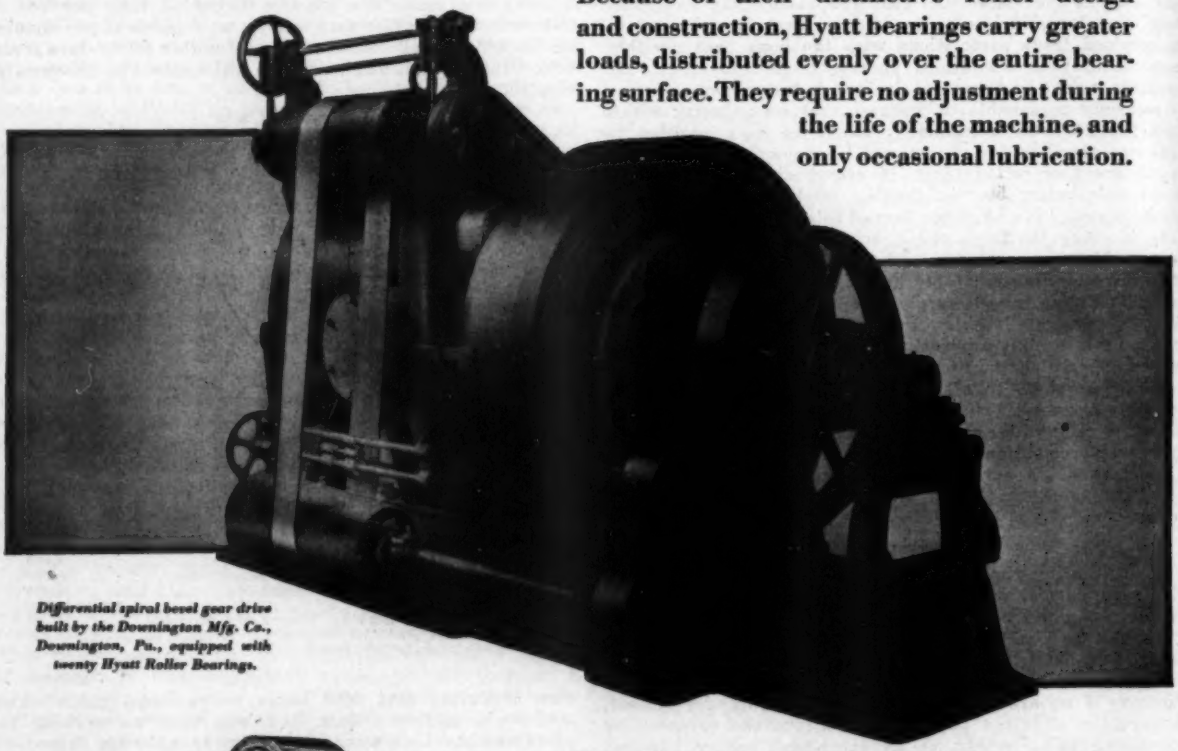
Downington Differential Paper Machine Drive

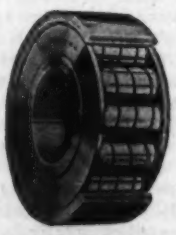
THE latest development in a sectional drive for paper machinery . . . the last word in heavy paper machine drives . . . loads carried by 20 Hyatt bearings.

Modern paper mill machinery demands bearings of simple construction, yet capable of uninterrupted service with a minimum of attention. Hyatt Roller Bearings suit these requirements perfectly.

Because of their distinctive roller design and construction, Hyatt bearings carry greater loads, distributed evenly over the entire bearing surface. They require no adjustment during the life of the machine, and only occasional lubrication.



Differential spiral bevel gear drive built by the Downington Mfg. Co., Downington, Pa., equipped with twenty Hyatt Roller Bearings.



High Duty Hyatt Roller Bearing—outer race cut away to show construction of roller assembly and method of keeping rollers bathed in constant flow of oil.

Hyatt keeps gears in proper alignment so that they roll on the pitch line and not on the points of the teeth, thus prolonging gear life. They permit pulleys to turn freely, reducing belt wear. Whatever the application, power is saved and equipment relieved of strain.

Hyatt Roller Bearings are the logical choice for all modern paper and pulp mill equipment. Our engineers are ready to serve you with the development of suitable designs.

HYATT ROLLER BEARING COMPANY

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possibilities for savings. For our other costs and expenses we work as follows:

ITEM	FROM	TO
Insurance, Depreciation & General Expenses	Aug 10th	August 27th
Office & Administrative Expenses	" 28th	Sept. 16th
Power Plant Materials & Supplies	Sept. 17th	Oct. 5th
Selling Expenses (including advertising)	Oct. 6th	Oct. 18th
Repair Materials and Supplies	Oct. 19th	Oct. 28th
Purchased Power	Nov. 1st	Nov. 6th
Power Plant Wages & Salaries	" 7th	" 12th
Repair Wages & Salaries	" 13th	" 17th
State and Local Taxes	" 18th	" 20th
NET PROFIT	Nov. 21st	Dec. 28th

In other words, after running our plant continuously from Jan. 1st to Nov. 20th, we have received enough from sales to take care of all our costs and expenses for the year. Anything we take in after that is Net Profit—that is assuming we make 10 per cent, which a large proportion of the mills don't do. When you get down to 6 per cent or 7 per cent net profit you break into December before you start working for the year's profit.

It may be of interest to say that in figuring the above, I have assumed as stated above, that sales were $1,000,000 on which a profit of 10 per cent was made, and that the paper produced during the year of 6600 hours was just sufficient for these sales. Thus every hour's production sold for approximately $151.50.

The chief point I want to bring out is the evident necessity for careful use of our raw materials and supplies, for we have to work for half the year to get sufficient funds to pay for what we shall consume during the year. Any savings we can make will put back the date when we can start working for the year's profit. To me it seems only reasonable, that we should be able to devote the last eight weeks of the year to this purpose, so that our net return will be from 12 per cent to 15 per cent per annum.

Before closing, I want to refer to the report recently published by the Committee on Recent Economic Changes. The report had not been published when I chose the topic of this address, but it bears on this topic because it stresses the fact that "Acceleration rather than structural change is the key to an understanding of our recent (1922-1929) economic developments."

The report goes on to say, that "Gradually the fact emerged, during the course of this survey, that the distinctive character of these years owes less to fundamental change than to intensified activity." Thus it is plain that not only in our industry but in all industries, "time" as a cost factor is becoming increasingly important. Not that we work longer —we don't, rather the opposite is the fact—but because every hour we accomplish more, produce more. As the committee adds "The changes have not been in structure, but in speed and spread."

According to the report, the use of power has increased 3¾ times faster than the growth of population, and as we know, this is one of the primary causes of the increased prodution per man hour.

There has also been an increase in the velocity of the turnover of credit according to the report, due to improved transportation and communication, scientific control of inventories, the continuation of the simplification movement and our accelerated turnover of commodities. Business has thus developed a new degree of economy in the use of credit, which may be set down as another charactertistic of the period.

Price relationships, Wages and Cost of Living are dealt with in Section 2, and the committee says that in this field is to be found one of "the striking and significant developments" of the period. They contrast it with the period between 1896 and 1913, when the wholesale price level rose 2.3 per cent annually, with wages rising a very little more than this, so that their purchasing power increased only ½ per cent per annum. In the period 1922-1927, these same wholesale prices declined about 1/10 per cent each year while the purchasing power of wages rose 2.1 per cent each year. The increase in per capita productivity in manufacturing from 1922 to 1927 was 35 per cent.

Economic reorganization, the co-operation of business leaders, economic experts and the Government, the general spread of information, the growth of trade associations, the co-operation of labor to increase productivity are all mentioned as influences at work, to weld us together in a new solidarity of thought and action, and as having a broadening influence on the minds of our leaders to whose influence we must look for the maintenance of our "economic balance". The concluding part of the report deals almost entirely with the importance of maintaining this "economic equilibrium" in all things, such as the balancing of consumption and production and says that "Increasing skill and scientific data have made the anticipation of demand far more accurate". Nobody after reading the report will doubt the value of basing their business on budgets set up after a scientific survey of the sales possibilities.

T.A.P.P.I. Convention Committee Organizes

Formal plans have been prepared for the fall meeting of the Technical Association of the Pulp and Paper Industry to be held in Richmond, Va., at the Hotel Jefferson on Tuesday, Wednesday and Thursday, September 24, 25 and 26. Arrangements are under way for the accommodation of upwards of 350 members and guests, including many women visitors.

The Jefferson Hotel, in which the convention will be held, one of the largest hotels in the city, has made the following rates for members and guests of T.A.P.P.I. during convention week: Single rooms without bath, $2.50 to $3; with bath, $3.50 to $5. Double rooms without bath, $2.50 to $6; with bath, $5 to $10.

Convention headquarters has an auditorium seating 1,000; a ballroom, and committee rooms. It is advised that reservations be made at once with B. K. Steadman, general chairman of the convention committees, in care of the Standard Paper Manufacturing Company, Richmond, Va.

Convention Committees

The following committees have been named for the conduct of the meeting:

Administration, O. L. Schweickert, chairman; J. F. Ryland, M. E. Marcuse, A. R. Taylor, H. S. Donald, associates.

Program, J. R. Diggs, chairman; J. P. Massie, C. R. Sevett, associates.

Arrangements, G. A. Carlton, chairman; A. L. Rothchild.

Ladies, B. W. Coale, chairman.

Publicity, J. A. Carter, chairman; T. Pinckney, Clarence Boykin, associates.

Advisory, J. F. Ryland, chairman; M. E. Marcuse, Elis Olssen, F. E. Brown, J. P. Hummel, H. W. Ellerson, associates.

In attendance at the organization meeting in Richmond on Tuesday, July 16, were B. K. Steadman, G. A. Carlton, H. S. Donald, J. F. Ryland and A. L. Rothchild, of the Standard Paper Manufacturing Company; Elis Olssen, of the Chesapeake Corporation; J. R. Diggs and B. W. Coale, of the Albemarle Paper Company; O. L. Schweickert, of the Bedford Pulp & Paper Company; R. G. MacDonald, Secretary of T.A.P.P.I.; L. W. Crouse, Paper Makers Chemical Corporation; W. T. Dabney and J. A. Carter, of the Richmond Chamber of Commerce.

Plans for the Washington Trip

Arrangements have also been completed for the trip to Washington, following the three-day meeting of the association at Richmond. Instead of having a program in which papers of a technical nature are read, the schedule of events in the nation's capitol will be a series of visits to points of interest to paper manufacturers.

Hotel Headquarters

The Wardman Park Hotel has been selected as convention headquarters. This hotel combines the features of a summer resort with the advantages of a metropolitan hotel. Especially low rates have been made to members of T. A. P. P. I., a rate of $4 being named for single rooms and $6 for double rooms; every bedroom has a private bath, and guests are privileged to use the Wardman Park swimming pool.

District of Columbia Paper Mill

Of special interest to pulp and papermakers will be a visit to the only paper mill in Washington, that of the District of

Nordstrom Valves

PREVENT LEAKS

RESIST CORROSION

and HANDLE THICK SLURRY

in the PAPER INDUSTRY

Nordstrom Valves are widely used on various lines in pulp and paper mills because of their leak-resistant and corrosion-resistant qualities. The photographs above show Nordstrom Valves in one of many types of paper mill service successfully handled by these valves—Hypochlorite Bleach Liquors. This service requires resistance to corrosion and the handling of thick slurry when the settled sediment is discharged from the settling tanks.

The patented lubricating principle of Nordstrom Valves produces a positive seal between the contact surfaces of the plug and its seat and surrounding body, making the valve tight against leaks. When fully open, no part of the ground surfaces of Nordstrom Valves is exposed to the corrosive action of the line fluid.

"Merco" Lubricants

"Merco" Lubricants are available for specific services in the Paper Industry. They are made of special ingredients and are obtainable in convenient stick form.

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Dallas—Magnolia Bldg.
Detroit—2842 W. Grand Blvd.
El Paso—111 S. Virginia St.
Houston—Petroleum Bldg.
Los Angeles—538 S. San Pedro St.
New Orleans—Masonic Temple Bldg.
New York—11 W. 42nd St.
Pittsburgh—Clark Bldg.
Portland—Buyers Bldg.
San Francisco—342 Sansome St.

Agencies in Principal Cities

FACTORIES: Oakland, California and Belleville, New Jersey
CANADIAN MANUFACTURERS—Peacock Bros., Ltd., Montreal. Cobalt, Winnipeg, Vancouver.
ENGLAND—Audley Engineering Co., Ltd., Newport, Shropshire

Columbia Paper Manufacturing Company, located in the city proper and on the banks of the historic Potomac river. Using wood (loblolly pine, etc.), from its own nearby forests and cooking it by its own modified soda process, this mill is able to produce many grades of paper having properties favored by printers.

The Government Printing Office

The United States Government Printing Office will be host to T. A. P. P. I. on the afternoon of Saturday, September 27. At present the office, which is an independent government establishment to provide printing and binding for Congress and the federal departments, bureaus, and independent offices, occupies seventeen acres of floor space, accommodating 4,150 employees.

The Section of Tests and Technical Control is under the direction of Dr. Edward O. Reed, a member of T. A. P. P. I. This department is well equipped with instruments and personnel to test all of the materials received for the use of the plant and to prepare specifications for all materials, inlcuding paper purchased. The Government Printing Office manufactures for its own use, ink, type metal alloys, press rollers and adhesive compositions.

Luncheon will be served to T. A. P. P. I. members in the Printing Office dining room which seats 700 persons at one time. The time available will be altogether too short to see adequately the many interesting departments, but those desiring to remain in Washington for a few days will be welcome to visit the office at any time.

Bureau of Standards

Under the direction of B. W. Ssribner, chief of the Paper Section of the Bureau of Standards, the excellent machinery of this section will be kept in operation and production throughout the period of the Technical Association convention. The new currency paper was developed here and almost every grade of paper has been made in the mill, while nearly every paper testing instrument has been studied and reported on by the Bureau staff.

Other Points of Technical Interest

For those who remain in Washington on Saturday, it will be of interest to know that all the Government departments remain open till 4:30 p. m. A great deal that is of interest may be seen at the Bureau of Engraving and Printing where the new currency is being made, and at the Bureau of Chemistry where many studies have been made of the chemicals entering paper manufacture, such as rosin, casein, and of special photographic papers.

Local Committee

The general committee in charge of the convention in Washington includes H. R. Harrigan, G. W. Coggeshall, A. D. White, M. E. Kantrowitz, J. M. Krauss, R. R. Machmer, B. W. Scribner, M. B. Shaw, R. H. Simmons, O. G. Strieter, L. B. Tucker, C. J. West.

Reservations

It is requested that hotel reservations for the three-day convention in Richmond be sent to the Secretary of T. A. P. P. I., 18 E. 41st Street, New York, N. Y., and when railroad tickets for Richmond via Washington are purhased, a certificate should be asked for which will entitle those who attend, to a halffare return rate, providing 150 certificates are turned in at Richmond.

Publisher Sues International Paper Co.

The International Paper Company and the International Paper & Power Company have been sued for two and a half million dollars by William Lavarre, publisher of the Columbia Record, the Augusta, (Ga.) Chronicle and Spartanburg (S.C.) Herald and Journal.

The suit alleges that the companies agreed to lend Mr. Lavarre two and a half million dollars for the purchase and development of newspapers in the southeast, but that they had conspired to violate their agreement and to get control of the four papers already purchased by Mr. Lavarre for their own use.

Other Countries Celebrating L. G. Jubilee

Response to the celebration of Light's Golden Jubilee, marking the fiftieth anniversary of Thomas Edison's invention of the incandescent lamp, has been universal. Austria is planning a Light Festival during the Autumn Exhibition from September 2 to 8, and the Annual Congress of the German Association of Technical Illumination, September 12 to 14, both of which will be held in Vienna. Japan has also decided to take part in the celebration by appropriating 250,000 yen for the gala affair which will be held in Tokyo for one week in the middle of October. Argentina is also planning a Light Festival to be held in Buenos Aires. Many other countries will participate but have not announced definite plans.

The climax of the celebration will come on the evening of October 21 at Dearborn, Mich., where Mr. Edison will "remake" his original incandescent lamp in his old laboratory which Henry Ford has had moved to Dearborn and in which the original machinery has been installed. Another interesting thing brought out by the Jubilee is a replica of Mr. Edison's original lamp which is being manufactured in great numbers. This lamp, though quaint, will burn, and it is arousing great curiosity because of the contrast with the modern inside-frosted lamp of today.

The United States Government has joined in the celebration by issuing a special postage stamp bearing an engraving of Mr. Edison's original lamp.

Merco Nordstrom Plant Completed

Completion of the enlarged plant of Merco Nordstrom Valve Company in Oakland, California, is announced. It offers practically double the amount of manufacturing space

Merco Nordstrom Valve Co.'s new plant at Oakland, California

formerly available and also provides special engineering quarters. Two years ago the Oakland plant was erected and at that time was believed to be large enough for several years to come but growing demands required doubling of facilities. The company manufactures lubricated plug cock valves for the gas, oil, food, paper and chemical industries.

Transcontinental Air Passenger Line

Following closely on the heels of the newly inaugurated air-rail transcontinental systems, an all-air passenger line from coast to coast will start on regular schedule in the fall, according to plans reported in the current Sales Management magazine.

The all-air line will be established by the Boeing Air Transport, Inc., which now operates Pacific coast air lines, and will operate between New York and San Francisco and Los Angeles, according to the report. It is planned to make the transcontinental flights, with two or three stops, in thirty hours, where the air-rail systems established by the New York Central and Pennsylvania railroads require forty-eight hours for the trip, transporting their passengers by air in the daylight hours and by rail at night.

An announcement in the Berlin Papier-Fabrikant of July 21 gives the information that members of the Verein der Zellstoff und Papier-Chemiker und Ingenieure are eligible to membership in the Technical Association of the Pulp and Paper Industry without other formality than proof of their membership in the Verein.

an economic force pitted against waste —*wherever wheels and shafts turn*

A BASIC idea thirty years ago, "Timken Bearing Equipped" is today an economic force pitted against waste... typifying a huge replacement program which sweeps all before it.

As in all industry, manufacturers and users of all types of Timken-equipped paper mill machinery find in Timken *the one bearing that does all things well*... whether the loads are all *radial*... all *thrust*... *or a combination of both.*

Paper machines, cutters, dryers, chip screens, pulp shredders, mill drives, Jordan engines, electric motors, gear reduction units ... all have yielded to the tremendous power and lubrication savings, maintenance elimination and endurance made possible only by the exclusive combination of Timken tapered construction... Timken *POSITIVELY ALIGNED ROLLS* ... and Timken steel.

"Timken-Equipped" represents the difference between waste and conservation, between antiquated and modern... a deciding factor in building and buying mechanical equipment... wherever wheels and shafts turn.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Brown Paper Mill Co. to Double Capacity

The Brown Paper Mill Co., Inc., Monroe, La., has announced plans for two new units which will be devoted to the manufacture of Sulphate Liner Board, for which the demand has become so great the company has been forced to turn down new business.

The original unit of the Brown company's mill consisted of one paper machine and four digesters, and the first paper was made September 6, 1924. Two years later work was started on a new unit, doubling capacity. This was completed October 1, 1927. The new unit will call for two paper machines and the required amount of pulp manufacturing equipment. It is expected the new units will be completed and in production by July, 1930. The plant will than have a capacity of 350 tons daily. Geo. F. Hardy of New York City is the engineer.

Diesel Engine Mfrs. Organize Association

With the rapid growth in the use of Diesel engines in all types of industrial, public utility and municipal service, as well as in the railway, automotive, aviation and marine fields, the manufacturers of Diesel engines have realized the need for a closer contact with each other and with the problems of the user. As a result, twelve of the leading builders of Diesel engines in the United States, have organized the Diesel Engine Manufacturers Association. The association has as its primary object, the advancement of Diesel power in America and a broad program of co-operation with the users of this type of power.

The following are officers of the association: President, Henry R. Sutphen, president of Electric Boat Co.; vice president, E. T. Fishwick, vice president of Worthington Pump & Mach'y Corp.; secretary and treasurer, Harlan A. Patt, manager oil and gas engine department of Ingersoll-Rand Co. The association also employs M. J. Reed as research engineer, with headquarters at the association office, 30 Church street, New York City.

Fisher Governor Company Acquires Apex Regulator Co.

The Fisher Governor Company of Marshalltown, Iowa, this week announced that they had purchased the Apex Regulator Company of Decatur, Illinois. The Apex products are closely allied with those of the purchasing company, which manufactures a complete line of automatic pressure control specialties.

A. W. Cash, inventor and founder of the Apex Company, has contracted to act as engineer and have general supervision of the new plant. The wide experience of Mr. Cash makes him one of the outstanding valve designing engineers in this country.

The Fisher Governor Company will operate the Apex Regulator Company as an entirely separate unit, but their products will be handled by the established Fisher representatives throughout the United States and foreign countries.

W. A. Jones Co. Makes Appointments

W. A. Jones Foundry and Machine Co., Chicago, has announced the appointment of Warren C. Webb as Pacific Coast sales manager, with offices at 443 East Third street, Los Angeles, Calif., and Walter M. Sutton as manager of their Pittsburgh office.

Mr. Webb was formerly Chicago sales manager for the company, and is thoroughly familiar with its line of products. Mr. Sutton was formerly in charge of the company's St. Louis office, having previously spent several years in the home office.

The American Hoist & Derrick Co., St. Paul, manufacturer of American Hoisting Machinery announces the removal of its office from 139 Townsend street, San Francisco to 5515 Doyle avenue, Emeryville, Oakland, Calif. Boyd Nixon, who was in charge of the San Francisco office, will continue in charge.

W. A. Yule Made Director F. C. Huyck & Sons

Watson A. Yule, sales representative of F. C. Huyck & Sons, has just been elected a director of the company.

Mr. Yule is the oldest representative, in point of service, in the sales department of Kenwood Mills, having been with the company since 1906. His many paper mill friends will be pleased to learn that his personality and business ability has won appreciation and been recognized by his company. Mr. Yule's long contact with the paper mills which extended many years prior to his association with Huyck & Sons, will undoubtedly bring to the Board an experience that will be invaluable. Mr. Yule's territory for the sale of Kenwood Felts and Jackets comprises the states of Minnesota, Michigan and Wisconsin, and the City of Chicago.

Harold S. Falk, vice president and works manager of the Falk Corporation, Milwaukee, Wis., has been appointed chairman of the Committee on Industrial Education of the National Metal Trades Association. Mr. Falk is also a member of the Committee on Education and Training for the Industries of the American Society of Mechanical Engineers.

New Catalogues, Books and Publications

Bailey Meter Co., Cleveland, O.—A new bulletin, No. 82, entitled "Bailey Thermo Hydraulic Feed Water Regulators" describes and illustrates thermo hydraulic feed water regulators in all pressure standards up to and including 1350 pounds per square inch. The Bailey regulator described in this bulletin embodies many new and distinctive features. Curves showing the flow characteristics of the tight-seating piston type of V-port valve which is used in all Bailey feed water regulators, as compared to other types of valves, are also shown in the bulletin.

Cincinnati Rubber Mfg. Co., Cincinnati, O.—"Belting Facts and Figures" is the title of a handbook put out by this company to be used as a guide to good practice in the selection and care of rubber belting. The data and suggestions offered in this booklet should prove helpful not only to the new belt user, but also to the more experienced operator who is studying every refinement in equipment to effect further reduction in operating costs. Copies on request.

Schutte & Koerting Co., Philadelphia, Pa.—A new edition has been received of bulletin 4-F describes not only the standard hand controlled thermo-compressor which was covered in the previous edition, but also illustrates and describes the automatic thermo-compressor used where close regulation is required. There is also a new edition of bulletin 8-B covering the S & K line of stop, check, nonreturn and triple duty valves.

S. Morgan Smith Co., York, Pa.—The Smith-Kaplan turbine is described in a new bulletin No. 122. This is the Kaplan automatically adjustable blade hydraulic turbine which this company has recently obtained the rights to produce.

Stephens-Adamson Mfg. Co., Aurora, Ill.—The July issue of the Labor Saver contains a description with illustrations of this company's coal and ash handling equipment as installed in the Canadian Paperboard Company's plant at Toronto, Can. Copies on request.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.—"Power at the Touch of a Button", special publication No. 1842, describes Linestarters and Linestart Motors and their application to modern industries. The booklet explains the Linestarter principle which permits motor control at the push of a button, and the Linestart motor which may be started across the line without the use of the Linestarter if high starting current is not objectionable. A small turbine leaflet, No. 20378, includes material on the general features and construction of the new 25 to 50 kw. d-c. geared turbine sets.

BOOK REVIEWS

The Paper Makers' Directory of all Nations—The 1929 edition of this publication has just been received. This directory gives detailed particulars regarding the paper, pulp and board mills of the world, such as location, productions, number and width of machines, tonnage output, power used, telegraphic address, etc., as well as lists of British wholesale stationers; paper, waste paper and rag merchants; paper stock dealers, china clay producers and merchants; cardboard box manufacturers, paper bag makers and paper agents with the mills they represent. The mill productions, too, are classified under 400 trade headings. Dean & Son, Limited, 29 King Street, Covent Garden, London, W. C. 2. are publishers, and the price is 21/-net.

Causes and Prevention of Deterioration in Book Materials—This interesting book which has been issued by the New York Public Library, was compiled by Robert P. Walton of its Science and Technology Division. It is a readily accessible catalogue of the efforts which have been directed toward the attempt to check the extensive forces of disintegration, as all of our present literature is confronted with the possibility of complete extinction within a short period. The books are listed by authors and a short synopsis of the contents is given. Special mention is made in the text citing as a reference for the paper section C. J. West's Bibliography of Paper Making. The price is 15 cents postpaid.

wire 304" x 90'
size over all 296' x 53'
total weight 2100 tons
designed speed 1500' a minute
capacity 200 tons a day
slice 60" high
48 dryers 302" face x 60" dia.
calendar weight 150 tons
82 freight cars for delivery

The Largest Paper Machine ever built . . . and built by Bagley & Sewall

Now in active production at the Great Lakes Paper Mill—and producing well up towards designed capacity. A monster machine, but watch-like in precision. Convincing evidence that as increasing requirements of progressive mills and modern methods develop, Bagley & Sewall is found dependably keeping pace.

The Bagley & Sewall Co.

Watertown, N.Y.

The Month at Washington

NEW Code of Revenue Laws—The Joint Congressional Committee on Internal Revenue Taxation is planning a new code of revenue laws, designed to show which laws actually are in force. A reduction in the corporation income tax from 12 to 10 per cent is also being considered.

New Publications—"Wages in Foreign Countries" is the title of a Senate Document (No. 9, 71st Congress, 1st Session) just printed by the Government Printing Office and available for distribution through the Superintendent of Documents of that office, being a compilation of the latest available data regarding industrial wages abroad, covering practically every country in the world, with a table of international wage comparisons, including paper manufacture.

"Commercial and Industrial Organizations of the United States", (1929 edition) is the title of Domestic Commerce Series No. 5, just issued by the Department of Commerce, which will enable the busy executive to find in this directory the association representing any industry, its address, and the secretary's name, covering national, international, and interstate organizations as well as state and local organizations listed by states, covering more than 13,000 organizations, or an increase of 50 per cent over the 1926 edition.

Tests of paper mulch to enhance growth of plants and minimize competition with weeds have indicated need for more extensive trials of the system under a wide variety of conditions and with many crops. In circular 77-C, Suggestions for Paper-Mulch Trials, just published by the United States Department of Agriculture, L. H. Flint of the Bureau of Plant Industry, explains the general differences in two kinds of paper used and the methods of applying it in horticulture. The department began small trials of mulch paper in 1924. From the horticultural viewpoint some of the results were very striking. Less is known as to the economic value of the practice. The department does not recommend extensive commercial-scale use of the paper. It does recommend experimental trials and careful comparisons of small areas of many kinds of plants grown under paper mulch with similar areas under ordinary methods of culture. This circular suggests trials which would be of advantage to gardeners and truck growers. Expense should be limited until trials have demonstrated economic practicability of the method. Circular 77-C is available free to those applying to the United States Department of Agriculture, Washington.

Industrial Disputes—Fewer industrial disputes occurred in the United States last year than in any year since the Department of Labor began its compilations in 1916, with 829 disputes involving 357,145 employees.

Analyzing Paper—Co-operative laboratory work performed at the Bureau of Standards shows that the dot-count method is desirable for determining the fiber composition of paper, which has just proposed revised official methods for determination of fiber composition, content of paraffin, and content of starch. The proposed changes were recommended after tests indicated that the changes would add considerably to the accuracy of these methods, and the method for paraffin as revised makes provision for quantitative separation of paraffin from other constituents commonly found in paper.

Paper from Bamboo—A process developed in India by which white paper of an excellent quality can be made from bamboo is attracting interest. Experiments the past year at the Indian Forest Research Institute at Dehra Dun have proved that pulp can be manufactured at a cost which compares favorably with other materials used.

Recent Customs Decisions—Hanging paper classified at 1½¢ per pound and 20 per cent ad valorem under par. 1309, tariff act of 1922, as printed, lithographed, dyed or colored, was claimed dutiable at only 10 per cent under the same paragraph, and the U. S. Customs Court in a recent decision so ruled (No. 276649-G).

Surface-decorated paper classified at 4½¢ per pound and 17 per cent ad valorem under par. 1305 was claimed dutiable at only 4½¢ per pound under the same paragraph, and the court also sustained this contention (No. 331263-G).

Handmade paper classified as embossed writing paper at 3¢ per pound and 25 per cent ad valorem under par. 1307, was claimed dutiable as plain handmade paper at 3¢ per pound and 15 per cent ad valorem, and the Customs Court also sustained this protest (No. 164403-G).

Belting for use on fourdrinier papermaking machines, classified at 50 per cent ad valorem under par. 1119, was claimed duitable as parts of machines at 30 per cent under par. 372, and the court so ruled (No. 169859-G).

Interstate Commerce Rulings—Rates on plain wrapping paper, paper bags and pulpboard, not corrugated, in carloads, from Bastrop and West Monroe, La., to destinations in southern territory, were found not unreasonable but unduly prejudicial in a recent decision of the Interstate Commerce Commision (International Paper Co., No. 18073), and undue prejudice was ordered removed and reparation denied.

Failure to establish rail-barge-rail rates on paper and paper articles in carloads, from points in Wisconsin and Minnesota to Jackson, Miss., were found not unreasonable, but unduly prejudicial in another decision (No. 20772), and nonprejudicial basis of rates was prescribed.

A lengthy decision was handed down in the case of Stevens & Thompson Paper Co. vs. Boston & Maine R. R., No. 18502, concerning ratings and rates on unprinted oatmeal and ingrain wall paper, in rolls, from New York State to certain destinations in Ill., Ohio, Pa., N. J., N. Y. and Canada.

Employment and Pay Rolls—Employment decreased 0.3 per cent in July as compared with June, while payrolls decreased 1.9 per cent, according to data compiled by the Department of Labor. With 1926 as the monthly average of 100 we find the following changes:

	Employment July 1929			Pay-roll totals July 1929		
	1928	June	July	1928	June	July
Paper and pulp	94.0	95.0	95.7	93.7	98.1	97.7
Paper boxes	90.8	92.5	93.2	98.4	100.3	99.7

Wholesale Prices—A slight reaction from the recent downward trend of wholesale prices is shown by information collected in representative markets by the Bureau of Labor Statistics, showing an increase to 96.4 for July as compared with 95.8 for June. With 1926 as the basis of 100, we note the following changes.

	July 1928	June 1929	July 1929	Purchase power of dollar July 1929
Paper and pulp	89.2	88.3	88.2	113.4

Recent Tests by the Bureau of Standards—Tests were recently made to confirm the validity of the practice of storing test samples of conditioned paper in air-tight containers over night, which indicates that the paper remains substantially as conditioned when stored in air-tight vessels so that there are ten grams or more of paper for each liter of air. Even though the temperature and humidity outside the vessel change considerably, owing to the relatively much larger content of moisture in paper than in the surrounding air, there can be little disturbance of the moisture content of the paper.

The Bureau finds as a result of recent tests that commercial sheating papers perform sufficiently well their function of

ANOTHER ONE OF THE 47 MANUFACTURERS OF MACHINERY FOR THE PAPER INDUSTRY THAT USES SKF BEARINGS

Green Bay Barker Company

YOU MAY BUY A BEARING AS A BARGAIN BUT TRY AND GET A BARGAIN OUT OF USING IT

for

Nothing is apt to cost so much as a bearing that cost so little.

SKF Puts the Right Bearing in the Right Place

"No Reason To Change," Says Green Bay After Using SKF Bearings For 18 Years

IF SKF Ball Bearings couldn't perform on the job without trouble and little attention... the Green Bay Barker Company would have found out about it in less than 18 years! Today, this pioneer user of SKF Bearings in the paper industry is still using them because they believe satisfied customers are worth more than saving a little on materials in the building of their barkers.

SKF Bearings are on the main spindle that carries the disc and revolves at 1450 R.P.M. A tough job... always, not only for the machine but for SKF. Yet, they run along easily, wear is negligible and *adjustments are never required.* That means settings stay put. With attention reduced to supplying fresh lubricant a few times a year, it's no wonder hundreds of users in the United States, Canada, Newfoundland and the pulp producing countries of Europe are enthusiastic about the performance of SKF equipped Green Bay Barkers.

SKF INDUSTRIES, INC., 40 East 34th Street, New York, N. Y. 234

SKF

Ball and Roller Bearings

keeping out the cold air, provided the paper is properly put in place in the walls of buildings. Building papers, besides their use in weatherproofing walls, have also other important uses such as protective coverings for materials on the job, for finished floors, and for fresh cement and concrete work, as linings for shipping cases, as temporary roofing and shelters, etc. The papers were tested for such properties as weight, thickness, strength, water resistance, and permeability to air.

Foreign Notes of Interest—Roughly 75 to 80 per cent of the natural sulphur consumed in Canada is for sulphite pulp.

Shortage of pulpwood is believed to have compelled the two largest pulp mills in Germany to invest recently in neighboring countries where this raw material is more readily available.

Japanese wood pulp production during 1928 reached 635,632 tons, including sulphite pulp, mechanical pulp, and Kraft pulp, while estimated production for the current years is placed at 712,800 tons.

Federal Trade Rulings—A corporation selling and distributing foreign and domestic papers to jobbers and manufacturing stationers, caused its trade name to be featured in its price list, together with the words "Manufacturer and Mill Agent", and the words "This is printed on Cockle Rag Onion-Skin paper, our own manufacture", in an advertising circular. However, the Federal Trade Commission in Stipulation No. 358 put the quietus on this practice, it being found that the corporation did not own or operate a mill wherein were fabricated the products sold and distributed by it, but all orders were filled from products manufactured in mills which it neither owned, operated or controlled.

Air Lines Shown by New Map—That access to air transportation is now virtually available to every sizeable city in the United States is shown in the publication of a new airway map of the country prepared by the Aeronautics Branch of the Department of Commerce. The map is the most extensive of its kind thus far published and was worked out to expedite the stream of inquiries which has flooded the department regarding airways, correspondence pouring in from commercial firms all over the country who want to arrange to have their executives and salesmen travel by air routes as well as shipping their goods by plane.

❖ NEW ENGLAND ❖

Advertisers Receive Souvenirs from Paper Mill

A souvenir book printed on Aurelian paper, furnished by the Worthy Paper Company Association, Mittineague, Mass., through their distributors, Arthur E. Ham & Sons, Boston, was presented to each member of the Advertising Club of Boston, who sailed from that city July 28, aboard the M. S. St. Louis, to attend the twenty-fifth annual convention of the International Advertising Association at Berlin, Germany, August 12, 13, 14, and 15.

The book is bound in flexible leather and inscribed "My Trip to Berlin." The representation of a Colonial Gentleman, with "Boston, U. S. A." underneath is also on the cover. The book contains an expression of thanks from the committee in charge of the trip. There is also a letter from President Hoover, Governor Allen, C. C. Younggreen, president of the International Advertising Association, the itinerary, names of the committee and names of members of the party. Blank pages are provided for a story of the trip.

R. H. Spaulding, Ex-Governor of New Hampshire and president of the Spaulding Fibre Co., North Rochester, N. H., has gone on a trip to California. His brother, Ex-Governor, H. N. Spaulding, has been recently mentioned for a diplomatic post under the Hoover administration.

Paper mills of New England, it is stated in the trade, have had the best July for years. Holyoke mills, generally, have shut down for two weeks for annual repairs, although keeping a skeleton crew available to handle rush orders. It is understood that paper mills in other cities follow the same custom. Low water in the Connecticut River and other streams at this time of the year, and particularly the present season, is another reason for closing. Tissue mills in New Hampshire have not been particularly busy, but manufacturers are looking for a reaction before September 1.

The American Writing Paper Co., Holyoke, Mass., has sold its Oakland Division at Manchester, Conn., to C. H. Dexter & Sons, Inc., Windsor Locks, Conn., manufacturer of specialty paper goods and a variety of papers. The mill has been closed for about two years. The purchasers are to use the plant for expansion in their present output. The equipment of the Oakland plant includes one 800-pound and two 1000-pound beaters, two Jordans and two 1200-pound washers, one combination fourdrinier and cylinder machine, widest trimmed sheet 56 inches. The plant has a capacity of approximately six tons daily.

Hollingsworth & Vose Co. has ordered five new beaters from E. D. Jones & Sons Company, for the East Walpole, Mass., factory. J. H. Horne, Lawrence, Mass., is constructing a three cylinder paper machine for Hollingsworth & Vose Co., to be used in making rope and jute papers. With the new machinery, the concern will be enabled to increase the capacity of its mills by 30 per cent.

Howard H. Reynolds, with the Rising Paper Co., Housatonic, Mass., since it began business as the B. D. Rising Paper Co., has resigned his position as sales and advertising manager. Mr. Reynolds started in the order department, and was promoted to various positions, assuming the duties of sales and advertising manager several years ago. He was president of the Salesmen's Association of the Paper Industry from 1921 to 1923. Greatly interested in the manufacture of paper, Mr. Reynolds has given many talks and written numerous articles in regard to the subject.

Citizens of Holyoke, Mass., have become financially interested in the Zeloid Products Coproation, whose plant is located in that city and has the backing of the Holyoke Chamber of Commerce. The product of the company is a transparent wrapping paper.

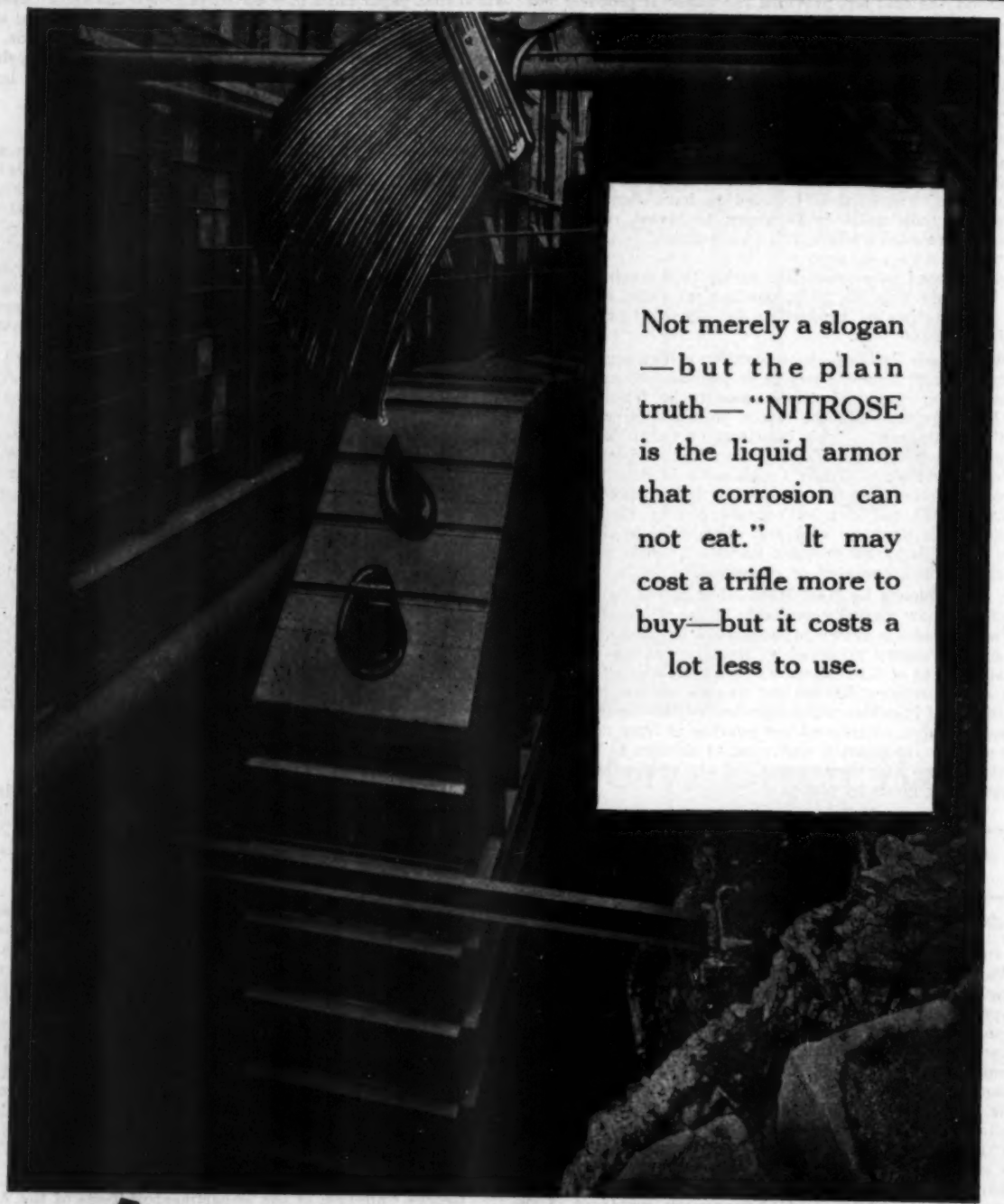
The Collins Mfg. Co., North Wilbraham, Mass., made a considerable portion of the paper used in the new government notes recently put in circulation. For more than two years the company has been studying and experimenting with a view of producing a satisfactory paper. The paper was run off early in the year.

The Rising Paper Co., Housatonic, Mass., has awarded subcontracts for the erection and completion of a proposed new addition to the mill at Great Barrington, Mass., for which the general contract was recently let. The expansion is reported to cost more than $90,000, with equipment and will provide for increase in the present capacity.

George Callahan, of the Department of Tests of the American Writing Co., Inc., for the last three years, has been transferred to the Standardization Bureau of the company, and will have his headquarters in Philadelphia.

The Boston & Maine R. R. has established an automobile truck service for shippers in Holyoke, Mass., and vicinity in less than carload lots, which is regarded as of particular value to paper converters. Six seven-ton trucks take the place of the "ferry" freight cars, bringing the shipments to the station in time for the fast and express freights the same day. In many cases, 24 hours time is saved to points from Holyoke.

Improvement in the demand for papermaking machinery and textile machinery has brought about the necessity for



Not merely a slogan —but the plain truth—"NITROSE is the liquid armor that corrosion can not eat." It may cost a trifle more to buy—but it costs a lot less to use.

The NITROSE Company
1500E PEORIA LIFE BLDG., PEORIA, ILL.

Stocked for immediate shipment, in steel containers, at Peoria, New York City, Rochester, Pittsburgh, Cleveland, Detroit, St. Paul, Kansas City, Los Angeles, San Francisco, Seattle, Montreal, Can., San Juan, Porto Rico.

NITROSE

converting about 3,600 square feet of storage in the plant of B. F. Perkins & Son, Inc., into manufacturing space to increase production. This company makes devices for testing the strength of paper, micrometer dial gauges, rag and stock cutters and other machinery. Archibald C. Lade is general manager, J. H. Hamilton, superintendent, and J. C. Cunningham, paper specialist.

The Albemarle Paper Mfg. Co., of Richmond, Va., has reopened a Boston office, located in the Chamber of Commerce Building, 80 Federal street. Blair Stringfellow, Jr. is in charge. A former office of the company in this city was closed six months ago.

The Groveton Paper Co., Inc., Groveton, N. H., has recently put a number of new lines on the market. E. G. Bullis, recently with the Oswego Falls Corporation, is now sales manager of the company.

George H. Sweetnam, Inc., representative of the Hartford City Paper Co., Hartford City, Indiana, formerly of 641 Atlantic avenue, Boston, has removed to a new plant at 286 Portland street, Cambridge, Mass.

McLaurin Jones, Brookfield, Mass., is putting out new sample books of gummed papers. John Carter, Inc., Boston, is distributing the Jones line, and Storrs & Bement Co., of the same city, the Ideal line.

The Inland Paper Board Co., whose offices are at Norwich, Conn., and plants at Montville and Versailles, Conn., has filed notice of increase in capitalization from 13,000 to 50,000 shares of no par stock.

The Tileston & Hollingsworth Co., Boston, is manufacturing a new size and weight in Crinoline Text, 25x38—70.

The Parsons Paper Co., Holyoke, Mass., has put on the market a new grade of fine writing paper—L'Envoi. It is particularly fitted for die-stamping, lithographing or engraving.

In line with its policy of extending service to active localities, Merco Nordstrom Valve Company has opened an additional office located in El Paso at 111 South Virginia street. Announcement is also made of the removal of the Seattle office to the Buyers Building, Portland, Oregon. The Company manufacturers lubricated valves and the product is in wide use in practically every industry where valves are required.

Following the announcement last month of Blythe & Co., acquiring an interest in the Hawley Pulp and Paper Co., Oregon City, Oregon, notice is received of a meeting of the board of directors July 11th at which the following officers were elected: Mansel P. Griffiths, of Blythe & Co., president; George W. Houk, formerly sales manager of Wrenn Paper Co., executive vice president; W. A. Kelly, vice president and general manager. The officers and Eric Bernays of Graham Paper Co., and T. Henry Boyde, of Blythe & Co., comprise the executive committee.

Thomas J. Burke, secretary of the Cost Association of the Paper Industry, is attending the sessions conducted by the National School of Trade Association Executives at Northwestern University, Evanston, Ill. From August 4 to 17 his address will be c/o National School for Trade Association Executives, Commerce Building, Northwestern University, Evanston, Ill.

George K. Ferguson has been elected president and general manager of the Watervliet Paper Co., Watervliet, Mich., to succeed Wm. M. Loveland, who resigned July 1st.

WISCONSIN

Mills Continue Expansion

Wisconsin is keeping up its expansion pace. The Marathon Paper Mills Company is the latest to launch a building program and has projects under way at two of its branches. One of these is a large new warehouse at its napkin mill at Ashland. Wis., and the other is a new carton plant at its Menasha, Wis., subsidiary, the Menasha Products Company. Both will be completed for use in early fall.

At Ashland the company is putting up an addition measuring 34 by 160 feet, building of reinforced concrete, brick and steel. It will have considerable storage space for finished material and a shipping room. The loading facilities will be located within the building, so that three cars may be spotted for all weather loading of freight. A machine shop also will be established in part of this building. Its cost is estimated at $45,000.

This building will serve another purpose, because it will enclose the settling basin the company maintains for its mill water supply. The basin holds 1,500,000 gallons of water. A new 10-inch intake is to be extended 1,600 feet into Chequamegon Bay so as to insure a pure supply of water.

The company also has improved its finishing room by laying Lumnite concrete floors. The present employed force is 145 persons, but this number will be increased by about 20 when the building program is completed, according to H. Josephs, manager.

At Menasha the company is putting up a much larger building, since it will have a frontage of 300 feet and a depth of 120 feet, and it will also be two stories high. Fireproof construction will be used throughout, according to E. H. Lewandowski, vice president and manager.

The Menasha Products Company has outgrown its present carton plant therefore found it necessary to build this addition. Machinery used in the present carton building is to be moved into the new one. The company will take advantage of the opportunity to add more presses and other equipment at the same time so as to modernize the plant thoroughly and increase the productive facilities. The former plant will be torn down.

New Machine Installed at Northern Paper Mills

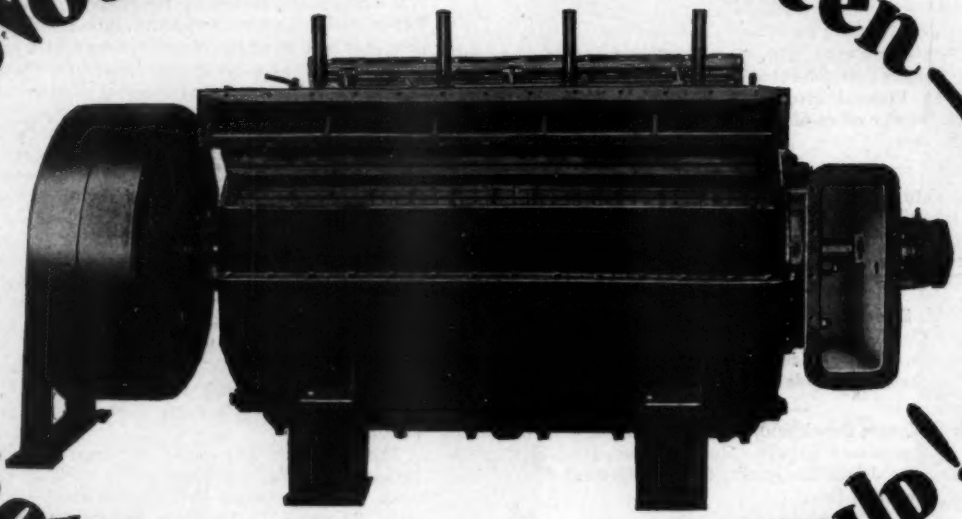
All will be in readiness for operation with a new paper machine about Sept. 15 at the Northern Paper Mills, Green Bay, Wis., according to the schedule of improvements in progress there. Satisfactory progress has been made in installation of the new tissue machine purchased from the Beloit Iron Works.

In replacing machines Nos. 1 and 5 with this larger one to be known as No. 7, the company will increase its production and lower its production costs. The old machines turned out 400 to 600 feet of tissue a minute, but the new one will have a speed of 1,200 feet, and an output of 30 tons daily, as a minimum, and 45 to 50 tons as a maximum. It will have a sheet 175½ inches wide.

It was necessary to put up a new building to house the machine. A new warehouse of three stories under construction for the last few months is nearing completion. The exterior has been finished and the interior will soon be ready for its occupants. The upper floors will be used for pulp storage, and the engineering, employment and laboratory departments will have offices on the first floor.

The Fox River Valley is now organized for another big safety drive covering a period of one year. C. R. Phenicie, manager of the Green Bay, Wis., division of the Wisconsin Public Service Corporation, has been named chairman of the Fox River Valley Safety Conference. With the assistance of W. J. Peacock, of the Northern Paper Mills, and other Green Bay men, he will make plans for the annual safety meeting which was awarded to Green Bay in June, 1930. All officers are chosen from the host city. Community safety

Now—a Rotary Screen



that produces CLEAN pulp!

NEVER before has a rotary screen been capable of screening sulphite and sulphate pulp so *clean*. The degree to which this feature has been developed is an important achievement in the paper industry.

And—with the factor of cleanliness controlled—the other advantages automatically fall in line and make the new Valley-Thune Rotary Screen undisputably superior to other methods of pulp screening.

If cleaner pulp—elimination of overflow and wastage—lower maintenance cost—less power—much less space—and tripled screening capacity mean anything to you. . . .

The facts contained in our new Rotary Screen Bulletin will be very interesting to you. An inquiry will bring it to your desk. Address The Valley Iron Works Co., Appleton, Wisconsin.

VALLEY

Equipment for Paper and Pulp Mills

New York Office: 350 Madison Ave.
Western Mfg. & Sales Div.: Smith & Valley Iron Works, Portland, Ore.

as outlined by the National Safety Council will be embodied in the program this year. Green Bay will try out the plan and report on it to the other cities.

Forestry

A maximum forest reserve of 1,000,000 acres owned by the Federal Government will be permitted under a law which is up for passage in the Wisconsin legislature. The state's earnestness to protect its fast dwindling timber supply probably will be a strong factor in passing the measure.

Under this plan Wisconsin will have as large a federal forest as Minnesota and Michigan. The state was reluctant at first to convert its lands purely to forest growth, and made its first federal forest 100,000 acres. As the situation became more acute, the acreage was raised to 500,000, and the new bill will double that amount. In addition, paper mills and others have seggregated thousands of acres of lands for tree growing.

Surveys are being made by Earl Tinker, forester in charge for the government, in areas already purchased by the federal forestry department. Roads have been staked out, boundaries fixed, and telephone communication established so as to prevent losses from forest fires.

A tract of 85,000 acres in Forest county is ready for the Government to take over. One state loan to a school stood in the way of this project, as all lands must be free from encumbrances. The school board voted a bond issue of $8,570, paid the loan, and gave the government title to the land.

Owners of power interests in Wisconsin face a new problem because of a resolution adopted by the Wisconsin Conservation Commission. It requests the Wisconsin Railroad Commission to stop construction of all new dams until relief can be found from the destruction of fish. It is contended that millions of fish die every year because of the power dams, especially when they become caught in shoals and pockets. The railroad commission has not announced its attitude in this matter.

There is a possibility that the mill abandoned by the Union Bag and Paper Company at Kaukauna, Wis., may again be operated. The city council, in an effort to overcome the unemployment caused by removal of the mill to Orange, Tex., is said to have interested some men of the paper industry in such a proposition. A more definite annouucement is expected later.

W. L. Lord, secretary and treasurer of the New Westminster Paper Co., Vancouver, B. C., was tendered a banquet recently on his return to Wisconsin for a visit. His former home was at Oconto Falls. The dinner was given by twenty-five stockholders of the Westminster mill and was held at Appleton, Wis. Mr. Lord reviewed the progress of the mill to date. Its president is J. J. Herb, formerly of Appleton.

Aviation activities of the Nekoosa-Edwards Paper Co., Port Edwards, are centered in a subsidiary company just organized to be known as the Nekoosa-Edwards Paper Co. Airways, Inc. This company will operate the tri-motored Ford cabin monoplane purchased recently, with Capt. L. G. Mulzer in charge. A flying school has been opened, and the company also is using its influence to have an air mail serve its locality.

The State of Wisconsin received an inheritance tax of $67,876.54 from the estate of the late D. W. Bergstrom, deceased president of the Bergstrom Paper Co., Neenah. His estate is estimated at more than a million dollars.

The Riverside Fibre and Paper Co., Appleton, had a double tragedy enacted recently. Two brothers, Theodore and Joseph Lenz, both employees of the mill, were killed there within two weeks of each other. One was electrocuted and the other fractured the lower part of his spine in a fall.

An explosion in an auxiliary part of the power plant at the Riverside Fibre and Paper Company on June 25 resulted in damage to a brick wall of approximately $100. An accumulation of gas was blamed for the explosion.

Earnings of the Kimberly-Clark Corp., Neenah, were $1,366,259 for the first six months of 1929, equivalent to $2.78 a share on 490,000 shares of no par common stock. This compares with earnings of $2.21 per share in the first half of 1928, $4.40 per share for the whole of 1928, $5.20 for 1927 and $5.96 for 1926. Assets at the end of 1928 were $45,758,129.

Fred C. Boyce Retires

Retirement of Fred C. Boyce, superintendent of the Wausau Paper Mills Co., Brokaw, has been effected and his successor is in charge. The new superintendent is H. L. Scherer, of Portland, Ore., a man with twenty-five years exnerience.

Mr. Boyce will be remembered as the first president of the American Paper and Pulp Mill Superintendents Association. He was honored during the annual convention at Wausau, Wis., in June, when the tenth anniversary of the founding was celebrated. At that time he announced his intention to retire. Mr. Boyce has been prominent in church and Y. M. C. A. work, and also was very active in civic and fraternal circles.

Wisconsin Carton Co. Ready to Operate

Wisconsin's new paper carton factory, the Wisconsin Carton Co. expects to start operations within about a month in the former Treman Tractor Co. plant, which has been undergoing remodeling for three months. The company will start with one unit and 38 employes. The equipment consists of a two color press with a capacity of 48,000 one pound butter cartons per hour; a high speed cutting and creasing press; and a gluing machine with a capacity of 100,000 cartons per hour.

This concern will start making a standard line of butter cartons and other food containers. This demand will be built up first and the company then will go into specialties.

A factory site previously bought by the company at Neenah, Wis., is to be sold. J. T. Mader, formerly of Appleton, Wis., is manager of the plant.

A gain in earnings over a year ago is enjoyed by the Kimberly-Clark Corporation, Neenah, Wis., according to a statement issued for the six month's period ending July 1, 1929. Net earnings for the six months were $1,366,259. This gives the holders of 490,000 shares of common stock $2.78 a share, as compared with $2.21 a share for the first six months of 1928. The company is confining itself largely to specialties and is increasing its volume steadily. The former mill of the Lakeview Paper Company, of Neenah, will be started up in the near future. It was purchased by the company during the spring.

Manufacture of twine and cordage on a large scale is seen in the organization of the Wisconsin Hemp and Fibre Company, of Madison, Wis. This corporation has purchased the Rock River Valley Hemp Company, of Waupun, Wis., the Matt Rens Hemp mill, near the same city, and has options on others at Juneau and Beaver Dam, Wis. These will be consolidated under one parent company. H. L. Plummer, of Madison, Wis., is president, and N. G. Moksnes, of Beaver Dam, is general manager. Contracts have been made for a crop of 1,600 acres of hemp this year.

Refinancing of the Riverside Fibre and Paper Co., Appleton, is expected following the filing recently of new articles of incorporation. The articles give the name of the firm as the Riverside Paper Co. and place the number of shares of common stock at 15,000. The value of the stock is not stated. Actual incorporators of the company also have not been announced as yet. This company has a new paper mill and power plant. Announcement of detailed plans is expected soon.

Effective Lubrication..
..not "oil" and "grease"

"OIL" and "grease" are no longer the buying specifications for industry's lubricants. Operating executives are insisting on *effective lubrication.* That's the thing today. And curiously enough it is very often found that the annual expenditure for lubricants actually becomes less than under the old price-buying basis. "Oil" and "grease" may be cheaper per gallon or per pound *but not per year.*

That's because effective lubrication is always economical of the lubricant—but the gain in maintenance, reduced power consumption, avoidance of shut-downs, minimized repairs and fewer parts replacement far outweigh any other consideration.

Texaco Lubricants combine with Texaco Lubrication Service to produce these results. There is a Texaco Lubricant for every purpose. Back of this complete line you have the accumulated experience of The Texas Company in the manufacture and use of lubricants, and the experience of trained lubricating engineers who will make a detailed examination of your plant and cooperate in securing not only the scientific lubricant but in assuring its most effective and economical use. Write The Texas Company first.

TEXACO LUBRICANTS

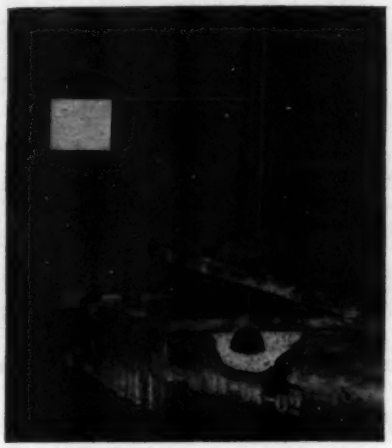
THE TEXAS COMPANY, 17 BATTERY PLACE, NEW YORK CITY

Offices in Principal Cities

Practical Helps for the Mill Man

Reducing the Hazard of Wet Floors

IN the paper mill wet floors about the stock tanks are a frequent hazard. To reduce the loss of stock and to overcome these wet floors, the Hammermill Paper Company

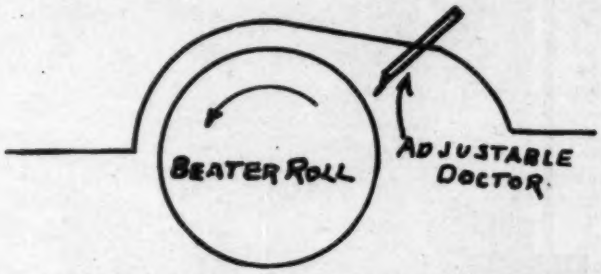


Courtesy—National Safety Council

has attached a float to the stock tank, with a horizontal arm which extends into plain view and carries a flag to give warning when the overflow point is near. The float is connected, through a cable and pulleys, to the horizontal arm. The small flag is green and plainly indicates by its position the condition within the tank.—*National Safety News*

Adjustable Hood Cleaner

A PAPER mill superintendent noticed that a number of old 1000 lb. Hollander tub beaters installed in the plant over which he had supervision were not circulating properly and that the doctors installed in the hoods were not properly deflecting the stock. To improve circulation as well as to prevent stock from running around the beater roll or lodging behind the doctor was the problem which demanded his attention. The beater tub bottoms were filleted and an adjustable hood doctor or cleaner was designed and installed in the hoods of various beaters. This device was set through the hood at an angle of 42° from roll center. An acetylene torch was



used to cut through the metal hoods. The cleaner was equipped with a lock nut arrangement for adjustment. The clearance between the edge of a cleaner and the beater bars of a roll is set at about ¾-inch on fine and book paper stock. A larger clearance is necessary on old papers. The filleting of the beater tubs and the installation of the adjustable hood cleaners have caused the circulation of the stock in the beaters to be much improved and has eliminated lodging of stock. Much trouble had been experienced with lodging in the beaters before making these changes. The adjustable feature in the doctor also permits it to be set more efficiently for proper operation of a tub that is handling broke.

Paper Machine Efficiency Record

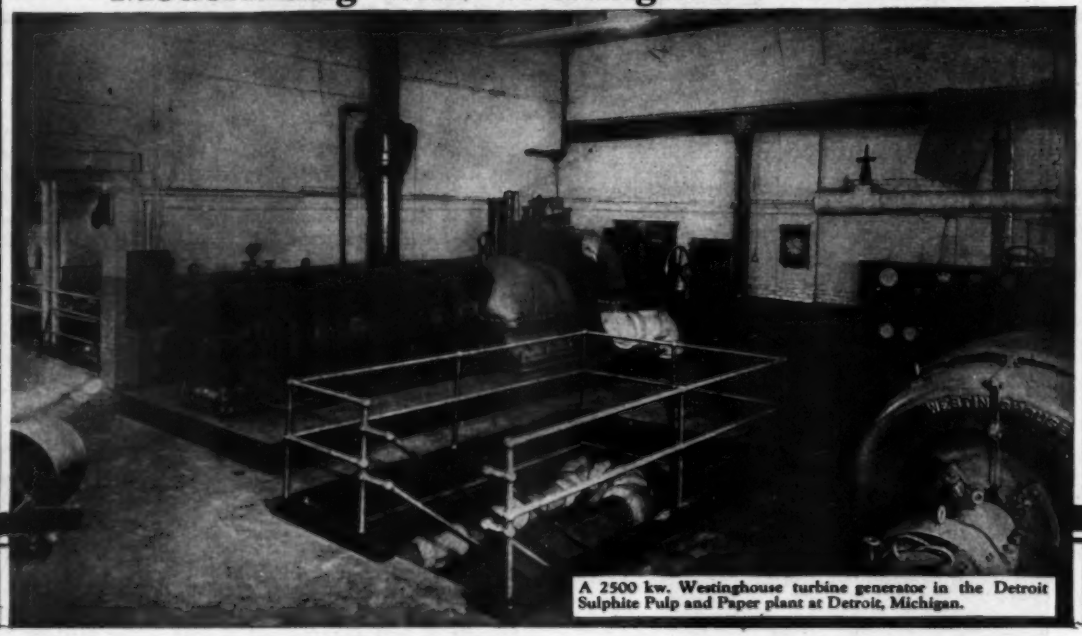
INFORMATION relative to the operating efficiency of every paper machine in a plant should be available to the superintendent, foreman, or machine tender at all times. It is simply through records that machine conditions can be studied and improved. Perhaps, the material desired by different men would necessarily vary with conditions in different plants. One superintendent, however, found that the information which he desired for the three machines in his plant could be easily charted. His records were kept on sheets about 8½" x 11" and were arranged as follows:

LOST TIME AND EFFICIENCY RECORD Month Year

TIME LOST ON PAPER MACHINES	1	2	3
Putting on Wires			
Putting on Jackets			
Putting on Press Felts			
Putting on Dryer Felts			
Putting on Aprons			
Putting on Belts			
Changing Press Rolls			
Repairing Press Rolls			
Washing Press Felts			
Sew Wires			
Sew and Seam Dryer Felts			
Repair Wire Guide			
Repair and Set Up Frictions			
Misc. Work and Small Repairs			
Repair Felt Guides			
Clean Pitch off Wire			
Washing Up			
Starting Up			
TOTAL (Hours)			

OPERATING EFFICIENCY	1	2	3
Total Days Run			
Total Products for Month			
Average Product per Day			
Total Operating hours in Month			
Total Lost Time Hours in Month			
Actual Operating Hours in Month			
Basis Weight			
Actual Weight			
Average Trim			
Average Speed			
Possible Production per Hour at 100% Efficiency			
Actual Production per Hour			
Actual % Efficiency			
Total Beaters Dropped			
Average Pounds per Beater			

Modernizing with Westinghouse Turbines



A 2500 kw. Westinghouse turbine generator in the Detroit Sulphite Pulp and Paper plant at Detroit, Michigan.

Reducing Power Costs *with Bleeder Turbines*

THE Detroit Sulphite Pulp and Paper Company, Detroit, Michigan, estimates that savings effected by the operation of its 2500 kw. Westinghouse bleeder turbine recently installed, will pay for the cost of the installation within two years.

Process steam for beaters, driers, and plant heating was formerly obtained directly from the boilers through reducing valves. Now, the steam needed for these purposes is first used in the turbine, thus generating power before entering the process. The electrical energy so produced supplies power and light for plant operation at a low cost.

Each plant presents an individual power problem which can be solved only by a study of actual operating requirements. Westinghouse engineers gladly will cooperate in your studies to determine the possibility of reducing your power costs. Consult our nearest office.

Power Plant Equipment includes

- Air Ejectors
- Feed Water Heaters
- Generators
- Generator Air Coolers.
- Heat Exchangers
- Jet and Barometric Condensers
- Reduction Gears
- Surface Condensers and Auxiliaries
- Stokers
- Turbines

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Canadian News

Continued Improvement in Newsprint

It is being freely said that the newsprint manufacturers are looking for $60 a ton for their product on the new contracts, as compared with the price of approximately $55.20 a ton, f. o. b. mill, agreed upon by the Quebec and Ontario mills following the series of conferences called by the provincial premiers last spring. Since that time operating conditions have improved to a very considerable extent and for several weeks past Canadian newsprint mills have been operating at over 85 per cent of rated capacity, the June figure recently published by the Newsprint Service Bureau being 86.7 per cent. The improvement which has taken place is all the more striking when one considers that the producing capacity is now considerably greater than it was a year ago.

While the Canadian mills had to cut prices some $5 or more a ton, the lessening of profit per ton of newsprint is not as serious as one might expect from a casual survey of the situation. If mill production had been maintained at the same rate as in 1927, then such would have been the case; but operations this year have been on a wider scale and the volume of newsprint turned out by the leading companies will undoubtedly be greater this year than it was in 1928. During the first six months of the present year, the Canadian output was 1,311,264, which is 152,751 tons, or 13 per cent, more than the production for the corresponding period of last year.

When it is considered that this showing was made during a period when great uncertainty prevailed (the first three months of the year) the cumulative result is considered very encouraging.

Woodlands Section to Visit U. S. Logging Operations

The Woodlands Section of the Canadian Pulp and Paper Association will hold its Summer Meeting on August 4th to 10th, and the following program has been drawn up:

Aug. 4th, Sunday—Those who go from or via Montreal meet at the Headquarters of the Woodlands Section at 9:30 a. m. and start at 10 a. m. by cars for Newcomb, N. Y. (about 170 miles). At the Lake Harris House, Newcomb, at 6 p. m., supper will be served. At 8 p. m. explanations will be given concerning the operations of Finch Pruyn and Co., to be visited the next day.

Aug. 5th, Monday—Morning: Trip by cars to the operations of Finch Pruyn and Co. near Newcomb, to inspect girdling of hardwoods, growth sample plots, etc. Lunch at Lake Harris House.

Afternoon: Trip by cars to logging operations of Finch Pruyn and Co. near the Headquarters Camp; inspection of cutting operations in progress. Supper at Lake Harris House and stay there over night.

Aug. 6th, Tuesday—Morning: trip to Indian Lake operations of Finch Pruyn and Co. Inspection of selective cuttings etc. Lunch at Cedar River House. Afternoon: By cars to Glens Falls, N. Y. (65 miles) via Pack Demonstration Forest. Visit to headquarers and newsprint mill of Finch Pruyn and Co. Supper and stay over night at the Queensbury Hotel, Glens Falls, N. Y.

Aug. 7th, Wednesday—By cars to Saratoga Springs, N. Y. (19 miles). Visit to Forest Nurseries (50 million young trees) of the N. Y. State Conservation Commission. To Lincoln, N. H. (about 190 miles) with a stop for luncheon at Hanover Inn, Hanover, N. H. or the Woodstock Inn, Woodstock, Vt. Supper and stay over night at Lincoln Hotel, Lincoln, N. H., headquarters of the Parker-Young Co.

Aug. 8th, Thursday—Trip by logging railroad to the operations of the Parker-Young Co., near Lincoln, where cutting and yarding pulpwood is in progress. Luncheon at the logging camps. Return to Lincoln and visit to the mills of The Parker-Young Co. Supper at Lincoln Hotel. Drive (about 55 miles) to Gorham, N. H., and stay there over night at Mount Madison House.

Aug. 9th, Friday—Drive (7 miles) to Berlin, N. H. Visit to the Forestry Department and through the mills of the Brown Co. Luncheon at Y. M. C. A. at Berlin. Trip to Jericho Forest of Brown Co. (5 miles) and inspection of the sample plots, etc. Back to Gorham. Supper and stay over night at Mount Madison House.

Aug. 10th, Saturday—Trip by cars and by boat to logging operations (cutting in progress) of the Brown Co. Lunch at a logging camp. By Company's boat through Rangeley Lakes to the Forest Nursery of the Brown Co. Supper and stay over night at the company's house at the Nursery.

Aug. 11th, Sunday—Return.

At a meeting in Toronto on July 11th of the Board Section of the Canadian Pulp and Paper Association, it was decided that the mills would shut down a certain number of days each summer month until the market has caught up with production. The exact number of days to suspend during any month was left to be determined by market conditions, though the maximum was discussed as to be not over 20 days in any one month.

Proposed Rayon Combine

Canada is interested in the news that European interests are forming a giant rayon combine, owing to the report that a "powerful Canadian wood pulp concern" is said to be assured the new project. This Canadian concern is thought to be the Canadian International Paper Co., whose rayon pulp plant at Kipawa is the largest in the world, and whose product is mostly shipped to Europe. Another possible concern is the Fraser Companies, whose 45,000-ton mill at Athol, N. B., will shortly be on a producing basis.

The combine was first mooted a few months ago by the Federation Internationale de Soie Artificielle, better known as "Fisa". This concern, which would sponsor the combined interests, is the holding and financing company formed by the late Alfred Lowenstein shortly before his death. It controls the Belgian Tubize Company and has an interest in German, Dutch and Polish rayon concerns as well. Since the death of Lowenstein, whose International Holding Co. holds 40 per cent of its stock, Fisa has continued to function and has formed financial connections with several powerful firms.

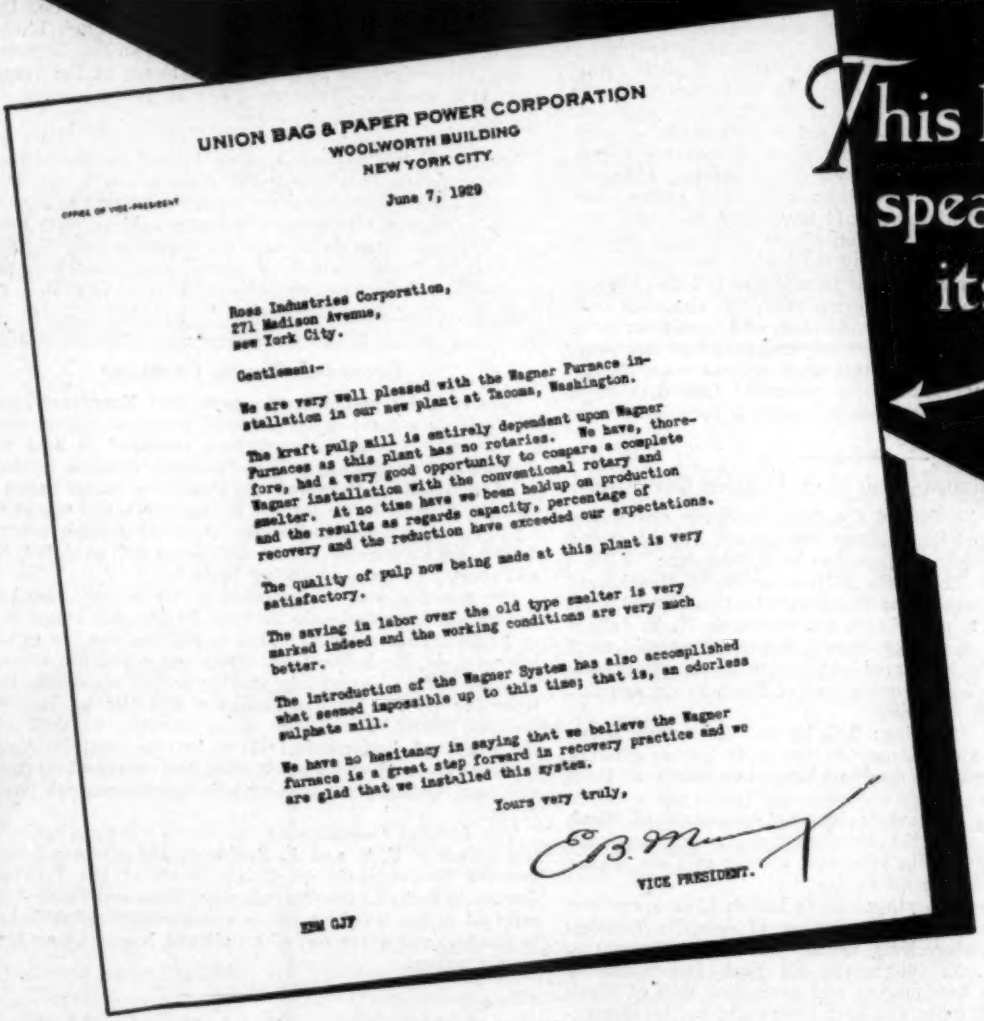
The Judicial Committe of the Privy Council has allowed the appeal of E. S. and A. Robinson, Ltd., from a judgment granted by the Court of King's Bench of the Province of Quebec in favor of the Wayagamack Pulp and Paper Co. The original action was brought to enforce an English judgment in Quebec, and arose out of an alleged breach of contract to supply paper.

To Have Competition in Overseas Market

It is stated that the experimental work of the Tasmanian Paper Co., Ltd., which was incorporated in May 1927, has been successful to the extent that most, if not all, of the technical problems involved in the manufacture of newsprint and other paper from Tasmanian hardwood, have been solved, and that it is now proposed to establish the industry on an extensive scale. To accomplish this, a prominent director of the company has gone to London with the object of conducting negotiations to that end.

It is generally understood that the Commonwealth Government has promised to assist the new industry by bringing in a bill providing for the payment of a bounty at the rate of 4 pounds sterling per ton of newsprint manufactured in

THE WAGNER FURNACE FOR SODA AND SULPHATE MILLS



UNION BAG & PAPER POWER CORPORATION
WOOLWORTH BUILDING
NEW YORK CITY

OFFICE OF VICE-PRESIDENT

June 7, 1929

Ross Industries Corporation,
271 Madison Avenue,
New York City.

Gentlemen:-

We are very well pleased with the Wagner Furnace installation in our new plant at Tacoma, Washington.

The kraft pulp mill is entirely dependent upon Wagner Furnaces as this plant has no rotaries. We have, therefore, had a very good opportunity to compare a complete Wagner installation with the conventional rotary and smelter. At no time have we been held up on production and the results as regards capacity, percentage of recovery and the reduction have exceeded our expectations.

The quality of pulp now being made at this plant is very satisfactory.

The saving in labor over the old type smelter is very marked indeed and the working conditions are very much better.

The introduction of the Wagner System has also accomplished what seemed impossible up to this time; that is, an odorless sulphate mill.

We have no hesitancy in saying that we believe the Wagner furnace is a great step forward in recovery practice and we are glad that we installed this system.

Yours very truly,

E B. M

VICE PRESIDENT.

EBM GJF

This letter speaks for itself

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Australia wholly from Australian woods. The bill, it is said, will also provide for a deferred duty of a similar amount to come into operation when the payment of the bounty ceases, and a condition of the bounty will be that it shall be paid only if there is an immediate production of 30,000 tons.

In referring to the subject in Parliament in March last, the Prime Minister said that it was now quite clear that newsprint could be produced on a commercial basis from Australian hardwood, and that he had little doubt, that, if the industry were established, the quantity of 30,000 tons annually would be greatly exceeded. He also intimated that the payment of the bounty would not necessarily be restricted to that quantity.

The annual golf match between the mills and paper merchants for the Lincoln cup took place in Montreal last month and was won by the mill men. The players were guests of the Rolland Paper Co. at Laval Sur le Lac before and following the match.

David F. Robertson, manager of the Canadian Paper Board Association, was presented with a cigarette holder by the Board Section last month on the occasion of his retirement from the position in favor of Frank Thorne, of Price Bros. and Co. Mr. Robertson had been manager of the association for six years and has rendered valuable services to the organization.

It is estimated that each year an average of 192,000 cords of pulpwood are lost in Canada through sinking in the rivers while being floated from the limits to the mills. This amount of wood represents a cut of trees covering approximately 32,000 acres of pulpwood land, and, at an average of $13 a cord, represents an annual loss of $2,496,000. The problem of how to eliminate or reduce this loss is being studied by the Forest Products Laboratories of Canada in co-operation with the Canadian Pulp and Paper Association.

Federal and Provincial Governments of the Dominion are co-operating for the purpose of making an inventory of Canada's forest resources. During the past month a conference was held in Ottawa, attended by three provincial ministers, as well as by several federal and provincial officials, the object being to arrive at the actual forest wealth of Canada. The conference was opened by the Hon. Charles Stewart, Minister of the Interior at Ottawa.

❖ QUEBEC ❖

Assembly of the two 156-inch newsprint machines at Murray Bay is being completed as quickly as possible in order to have the mill in operation by September; and G. J. Goldsborough, construction engineer from Iroquois Falls, and W. G. Beckie, from Fort William, are now at Murray Bay to supervise the setting up and starting of the two machines. The mill was erected last year, but the machines were not put in operation due to market conditions at that time. Murray Bay Paper Co. is a subsidiary of Abitibi Power and Paper Co. and is directly under the operating management of the Ste. Anne Paper Co.

Another paper machine was put into operation recently at the Gatineau mill of Canadian International Paper Co. This machine, which is the fifth to be started up at the mill, is 130 inches wide and is built to run at 700 feet per minute. With the production that this machine will make, added to that of the other four, the output of the mill will practically equal that of the Three-River mills of the same company, which is the largest paper mill in the world.

A few months ago it was announced that Price Bros. and Co. planned the erection of a fifteen-story office building. Last month the Town Planning Commission of Quebec City

Recorders of Profits

THE thin, red line traces a record of profits . . . . the chart is the engineer's balance sheet.

Have you ever made a study to determine exactly your one best temperature? And have you taken the time to figure out the profits and losses resulting from any variation from this temperature? Just try it. Sometimes a difference of only a few degrees means hundreds of dollars. American Recording Thermometers give you a record of facts . . . they are Recorders of Profits.

This is Type 3300 American Recording Thermometer. It is actuated by mercury. Made for any temperature range from minus 40 to plus 1000° F. The chart is 10 in. in diameter. The case is die cast with a beautiful black enamel finish. It is moisture proof. The pen-arm is Monel metal, and glass fountain pens are used. The flexible connecting tubing is steel covered by spiral bronze armor over which phosphor bronze braiding is woven. It is the only Recorder furnished with the Time Punch, making every instrument a Watchman's Clock. Accuracy is guaranteed. Compare its construction and accuracy by test!

Specify Catalogs Desired

American Recording Thermometers.....H-41
American Recording Gauges E-41
American Dial Thermometers G-41
American Glass Thermometers F-41
American Temperature Controllers.....R-41

CONSOLIDATED ASHCROFT HANCOCK CO., INC.
Bridgeport, Conn.
Subsidiary of Manning, Maxwell & Moore, Inc.

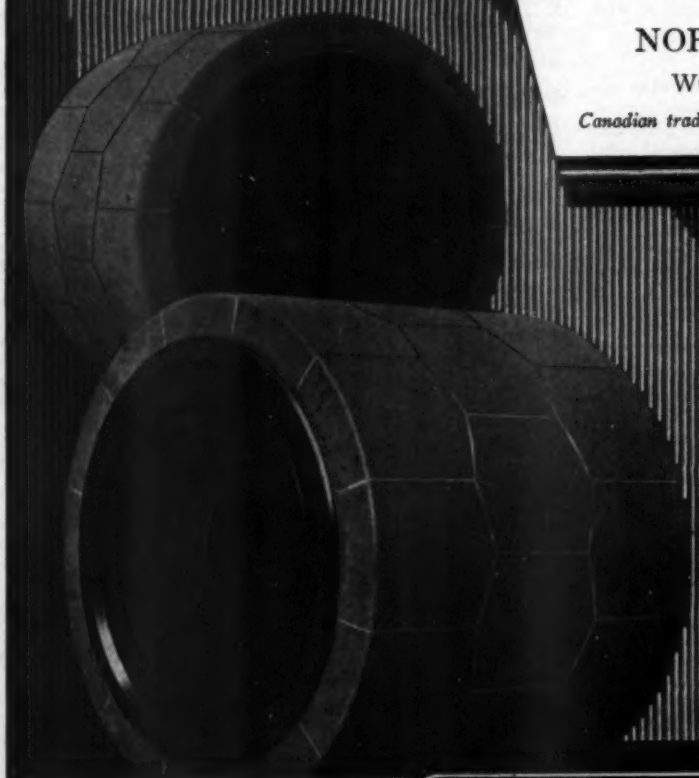
AMERICAN INSTRUMENTS
SINCE 1851

NORTON

Behind the development of the Norton Pulp Stone are years of research by engineers, chemists and mechanical specialists.

These men are always at the service of every user of Norton Pulp Stones with the object of assisting in the production of the best quality pulp.

NORTON COMPANY
WORCESTER, MASS.
Canadian trade now supplied from Canadian plant.



Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor
and Stair Tiles

approved the plans of this new building. It will be erected on Ste. Anne Street and will cost in the neighborhood of $500,000. It has been designed by Ross and Macdonald, of Montreal, and will be built with the very latest modern conveniences. Construction work has already been started in order that the building may be under cover before winter sets in.

While attempting to open the sluices at Riviére du Loup to prevent flooding the town on July 2nd, five men lost their lives when the gangway over the sluice collapsed. They were: Joseph Franke, foreman at the Warren pulp mill, Emile Gagnon, Elisée Mailloux, and Wilfrid and Léo Morin.

Canada Paper Deal Completed

The Canada Paper Co. has finally been acquired by the Howard Smith Paper Mills, all the legal details having been straightened out. The transaction involves the exchange of 20,000 shares of Canada Paper for a similar number of Howard Smith common shares. There is no cash transfer in the deal. The properties have been operated by the Howard Smith organization since the beginning of the year. Since that time the newsprint mill has been shut down entirely and production at Windsor Mills and St. Francis has been concentrated on the manufacture of kraft paper, book and magazine paper and colored specialties. Four machines are in operation, two of which are turning out kraft, which is sold largely to Kilgour Bros., the Toronto unit.

The properties acquired are as follows: units at St. Francis and Windsor Mills, Que., for the manufacture of newsprint, kraft and book papers; a paper box and specialty plant at Toronto, operating under the name of Kilgour Bros., Ltd.; 35,000 acres of freehold timber lands; a lease on an additional 200 square miles of timber lands; and a small hydro-electric power plant producing some 6,000 horse-power at St. Francis.

The new officers of the Canada Paper Co. are: C. Howard Smith, president; Harold Crabtree, vice-president and general manager; E. K. Robinson, assistant general manager; K. J. Pendock, secretary-treasurer; M. G. Peterkin, assistant secretary-treasurer. The directors are: C. Howard Smith, Harold Crabtree, F. A. Sabbaton, Arthur Cross, A. D. Emory, E. K. Robinson, E. Howard Smith, Jr., F. Campbell and H. B. Donovan.

ONTARIO

Dryden Earnings at High Level

Although official information is lacking, it is understood that earnings of the Dryden Paper Co. are running at a rate substantially ahead of those of last year. Furthermore, providing there is no set-back during the balance of the fiscal year, which ends September 30 next, it is likely that the company will show net earnings of around $400,000 as available on the 150,000 shares of no-par-value common stock outstanding. Operations of the company are understood to be on a satisfactory basis.

The greater portion of the company's earnings is derived from its sale of kraft paper and sulphate pulp, a large percentage of which is contracted for under a five-year agreement by the Bates Valve Bag Co. This contract, which was entered into a short time ago, has enabled the company to maintain operations at a very high level. The balance of the output, approximately one-third of the total, or 5,000 tons of kraft paper, is distributed throughout the West, a market which the company is very favorably situated to serve.

Within the last year the company has developed several new outlets for its production, over and above the Bates Valve Bag contract, with important customers, such as the T. Eaton Co., the Hudson's Bay Co., and the Barrett Co. Some progress has also been made in inducing the milling companies throughout Western Canada to adopt kraft paper containers for their flour products.

The Corrugated Paper Box Co., Toronto, has completed the removal of all equipment and paper supplies to the new plant

ERKENSATOR

Of 500 ERKENSATOR installations 366 additional orders received

Advantages of The Erkensator

Reduces waste by more than half

Gives clean pulp and paper not obtainable heretofore

At least 25% more perfect sheet in sorting room

Better formation

Loading material and pigment colors purified simultaneously

Cheaper Furnish

Lower cost in production

Erkensatored paper commands a better market

Now used for making

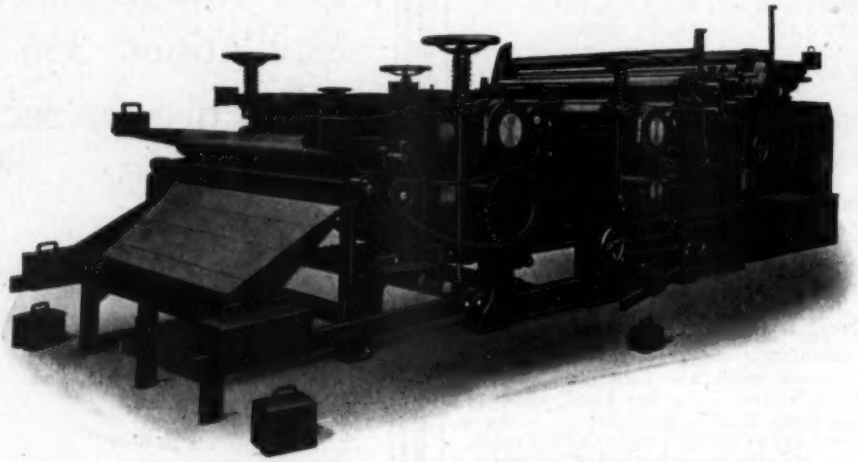
Bond, Ledger, Drawing, Tracing Parchment, Photographic, Nitrating, Glassine, Bamboo Pulp, Cigarette, Tissue, Condenser, Typewriter, Insulating, Cable, Greaseproof, Cornstalk Pulp

Write for our new descriptive catalog. No obligation.

ERKENS CORPORATION
122 East 42nd St.
NEW YORK

ERKENSATOR

THE 1929 ROGERS WET MACHINE*



USING THREE OR TWO FELTS
GIVING 48% A.D. PULP IN SHEETS

*equipped with A. D. Wood Double Sealing Collars.

Keeping abreast of the times—

1. Longer rolls to save Felt edges.
2. Top press rolls in roller bearings to save Felts and Power.
3. Double Sealing Collars to save Felts, Power and Fibre.

And also—

New type easy acting clutch, bearings and journals of ample capacity, and interchangeable parts to save repairs. A well designed machine and worthy of investigation.

1929 Activities in the South include:—

NORTH CAROLINA	One Machine
TENNESSEE	One Machine
ALABAMA	One Machine

GLENS FALLS MACHINE WORKS

GLENS FALLS, N. Y.

E. K. MANSFIELD CO., 501 Fifth Ave., N. Y. C. Eastern Representative

at Leaside. For some time past manufacturing has been in progress at the Leaside factory, and production has already exceeded the normal capacity of the old plant. The opportunity to completely overhaul the older equipment afforded by the necessity for transference of operations was utilized to the full and additional machinery has also been purchased and installed at Leaside. The immediate result of this policy has been a considerable increase in tonnage production on a more efficient manufacturing basis. Sales are materially ahead of those for the same period last year, and the company is now in a position to almost triple its output.

The Lincoln Division of Alliance Paper Mills, at Merritton, has been started up again after having been down for several weeks while extensive repairs and renovation to machinery and buildings were in progress.

To Investigate Clay Deposit

The paper industry is interested in the fact that the Northern Ontario China Clay Corp. has completed the erection of a pilot plant for the processing of the output from its holdings and for the extraction of the various by-products by chemical means, china clay being one of the ingredients used in the manufacture of coated and other papers.

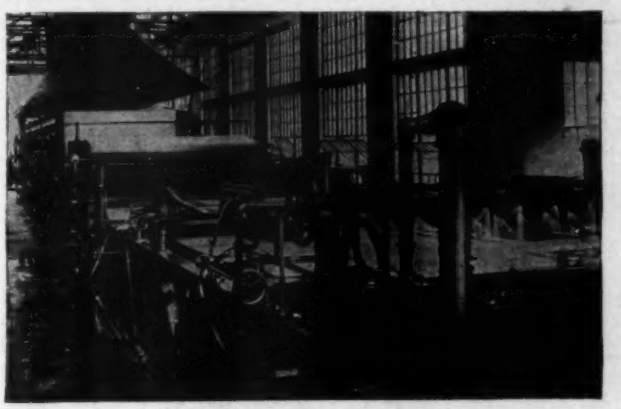
The plant, which is located in Toronto, is in charge of John G. Cloke, a chemist and metallurgist, who came to Toronto from Devon, Eng., to act as consulting and research chemist to the corporation. Work has been commenced on a shipment of about 30 tons of fire clay and kaolin brought for the purpose from the corporation's properties on the Mattagami river, to be used by Mr. Cloke for demonstration purposes and extensive tests designed to determine the lines of plant development for large sale production at the property itself.

The main products are fire clay, which is reported to be of the highest refractory type; kaolin, said to be equal in grade to the finest English kaolin, and silica sand, reputed to be of a purity hitherto unknown in bulk. In addition the promoters expect that the by-products will prove of great commercial value.

Professors A. H. MacLennan and T. H. Jones, of the Ontario Agricultural College, and E. F. Neffs, Lincoln County agricultural representative, recently made a tour of Lincoln County where paper mulching experiments are being carried on by a number of vegetable growers around St. Catharines. The results of the experiments are being watched with interest by growers and the paper industry. It is stated that, in some places where experiments have already been carried out on the mulching of vegetable crops by means of paper, the general consenus of opinion was that the process is too expensive, as it is a new procedure in Ontario; however, it can reasonably be expected that improvements will be made in its application.

Returning home a few days ago from a lengthy visit in the British Isles and Europe, Hon. William Finlayson, Ontario Minister of Lands and Forests, intimated that early application would be made of Sweden's reforestation policy to Northern Ontario districts. Mr. Finlayson said he was convinced that the Swedish system of replanting from seed offers the best solution to the reforestation problem with which the province is confronted at the present time. On his resumption of official duties, the Minister said he would recommend immediate and serious consideration of the policy by the Government and the Ontario Forestry Board.

Complete success has attended the experiments in the aerial dusting of forests in Northern Ontario in the fight against the spruce budworm, according to Flight Lieutenant N. C. Forbes, who recently returned to Ottawa after completing the first operation conducted from the new giant tri-motored plane purchased by the Dominion Government. Flight Lieutenant Forbes, flying low over the trees, dusted a large area of infested forest land around Westree, while Dr. J. M. Swaine, Associate Dominion Entomologist, who observed the experiment from the ground, reported that it had been a marked



Shorter shut-downs . . . fewer of them

SHUTTING down any machine for hours at a time, while slow-acting cleaning materials do their work, is an expensive practice and no longer necessary. And it can be avoided if the correct cleaning materials are employed.

By using Oakite materials you can reduce cleaning time to a minimum. Washing and rinsing of felts on machine or in tank is speeded; work is saved in cleaning cylinder rolls, screens, and screen plates. Then, too, because of the complete cleanliness that Oakite materials assure, cleaning is needed less frequently.

Ask to have our nearby Service Man call. Discuss with him the possibilities of applying Oakite materials and methods to your various mill cleaning problems. No obligation, of course.

Manufactured only by
OAKITE PRODUCTS, INC., 16 A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y.; Allentown, Pa.; *Atlanta, Altoona, Pa.; Baltimore, Battle Creek, *Boston, Bridgeport, *Brooklyn, N. Y.; Buffalo, *Camden, N. J.; Charlotte, N. C.; Chattanooga, Tenn.; *Chicago, *Cincinnati, *Cleveland, *Columbus, O.; *Dallas, *Davenport, *Dayton, O.; Decatur, Ill.; *Denver, Des Moines, *Detroit, Erie, Pa.; Fall River, Mass.; Flint, Mich.; Fresno, Cal.; *Grand Rapids, Mich.; Harrisburg, Pa.; Hartford, *Houston, Texas; *Indianapolis, *Jacksonville, Fla.; *Kansas City, Mo.; *Los Angeles, Louisville, Ky.; Madison, Wis.; *Memphis, Tenn.; *Milwaukee, *Minneapolis, *Moline, Ill.; *Montreal, Newark, N. J.; Newburgh, N. Y.; New Haven, *New York, *Omaha, Neb.; *Oakland, Cal.; *Oklahoma City, Okla.; Oshkosh, Wis.; *Philadelphia, Phoenix, Ariz.; *Pittsburgh, Pleasantville, N. Y.; Portland, Me.; *Portland, Ore.; Poughkeepsie, N. Y.; Providence, Reading, Pa.; Richmond, Va.; *Rochester, N. Y. Rockford, Ill.; *Rock Island, Sacramento, Cal.; *San Francisco, *Seattle, South Bend, Ind.; Springfield, Mass.; *St. Louis, St. Paul, Syracuse, N. Y.; *Toledo, *Toronto, Trenton, *Tulsa, Okla.; Utica, N. Y.; *Vancouver, B. C.; Williamsport, Pa.; Wichita, Kans.; Worcester, Mass.

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Industrial Cleaning Materials and Methods

A Real Good Friction Clutch

The **Peerless** *It's Unit-Adjusting*

The Peerless Unit-Adjusting Clutch is powerful yet compact; has few parts, all interchangeable; and all adjustment for wear is made at one point.

Adjustment is so simple that it can be made by anyone without the use of any special tools. Simply loosen the small hollow setscrews in adjusting nut and with clutch thrown out of engagement turn the toggle mechanism with your two hands—see illustration above; turning to the right to tighten the clutch and to the left to loosen it.

May we send you a copy of Bulletin No. 571?

T. B. Wood's Sons Co.
Chambersburg, Pa.

NEW ENGLAND BRANCH: **Cambridge, Mass.**

SOUTHERN BRANCH: **Greenville, S. C.**

Makers of Shafting, Hangers, Collars, Pulleys, Friction Clutches, Ball Bearings, Flexible Couplings, Rope Sheaves, Pillow Blocks, the U. G. Automatic Belt Contactor, Grooved Pulleys for "V" Belts and "V" Belt Drives Complete.

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Special Steel Plate Work for the Paper and Pulp Industries

We are capably equipped for special steel plate construction up to 2" thick for the paper and pulp industries, covering the following uses:

SODA AND SULPHITE DIGESTERS
HIGH PRESSURE TANKS
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RIVETED STEEL PIPE
LIME DRYERS
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Our engineers will gladly submit plans and estimates.

Write for free copy of Bulletin 15

THE YOUNGSTOWN BOILER & TANK CO.
YOUNGSTOWN, OHIO
Offices in Principal Cities

Youngstown TANKS

success. It is stated that these experiments will eventually mean the saving of millions of dollars of pulpwood and timber every year, which would otherwise be destroyed by the ravages of the budworm.

James Whalen

Following an illness of six months' duration, James Whalen, sixty-two, of Port Arthur, industrialist and financier, pioneer in the pulp mill activities of British Columbia, passed away lately at Duluth, Minn. He founded the Whalen Pulp and Paper Mills, Ltd., now the British Columbia Pulp and Paper Mills, Ltd., established the Woodfibre pulp mill in 1911 and the Port Alice mill in 1915, and the following year acquired the mill at Swanson Bay.

Other activities of Mr. Whalen were the founding of the Washington Pulp and Paper Co., Port Angeles, Wash., the Port Arthur Shipbuilding Co., the Great Lakes Dredging Co., the General Realty Co., and the Thunder Bay Contracting Co., all of Port Arthur.

Mr. Whalen was born in Collingwood and went to the head of the Lakes in 1873. He had made his home in Port Arthur ever since, but started for California six months ago in the hope of recovering his health. He was stricken at Duluth and had remained there for treatment.

Provincial Paper, Ltd., will build a two-story concrete office building which will cost $50,000 at the Port Arthur Division. Excavation for the structure, which will be 44 by 84 feet and two stories high with basement, has already been started. The floors will be used for office purposes, and there will be a recreation hall in the basement.

The largest shipment that the Northern Foundry and Machine Co., of Port Arthur, has ever made left the plant a few weeks ago consigned to the Mersey Paper Co., at Liverpool, N. S. It consisted of eight deckers for the mill which is being constructed by the Mersey Paper Co.

A. E. H. Fair Now with Alliance Paper Mills

A. E. H. Fair has left the employ of Arthur D. Little, Inc., and has resigned the vice-presidency of the Windsor Locks Mills, Inc., to take charge of the fine paper production of Alliance Paper Mills, Ltd., Merritton, Ont.

Mr. Fair has devoted the past several years to the delopment and production of specialty papers. In addition to this, his work with Arthur D. Little has involved both research into and manufacture of a number of grades, including a new type of dielectric tissue which was well received by the trade in connection with the manufacture of radio receiving sets. Mr. Fair, although a young man, is widely known as one of the most expert paper manufacturers in Canada, he having received his early training with the old Lincoln organization, which he has now rejoined.

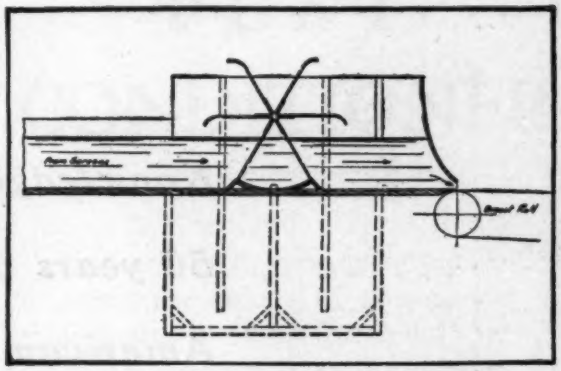
The factory and office staffs of the Dominion Paper Box Co., together with friends, and numbering over 300 people, held their annual picnic last month at Huttonville, near Toronto, and enjoyed a full day and evening in games, athletic contests and a general good time. The company supplied a considerable portion of the picnic fare, together with prizes for the soft ball, tug-of-war and other contests, and there was an orchestra for dancing in the evening.

The first annual report of Canada Wirebound Boxes, Ltd., shows earnings of $243,241 for the year ended April 30, 1929. Current assets total $926,553, as against current liabilities of $103,901, working capital standing at $822,652. The directors reported that the factory begun in Montreal in May 1928 had worked well for its first year, but had been hampered by price-cutting resulting from keen competition. Provision was made to increase capacity in the Toronto plant, which had been working at full capacity.

Half a million pounds of newsprint produced in 24 hours, shattering all previous production marks, is the new record

THE TRIMBEY HEAD—BOX ELIMINATOR

Patents applied for U. S. and Canada



A simple and inexpensive device which does what paper machine builders have tried to do with cumbersome, slime gathering baffles and passages; gives an even sheet across the wire.

No "Eddies" or cross currents can possibly travel from screens to slice; All are effectively smoothed out by slowly moving blades which extend entirely across the pond.

Eliminator rotated by the current of the moving stock; speed only 2-3 r.p.m.

Flexible rubber tips prevent all "wave" as blades leave liquid.

Absolutely no variation in head behind slice.

Slime gathering surface reduced to minimum.

No dead corners for lumps and slugs to accumulate.

Can be installed in your present head box in a few hours.

ASK US

TRIMBEY MACHINE WORKS,
Glens Falls, N. Y.

Makers of
CONSISTENCY REGULATORS
PULP SCREENS
METERING SYSTEMS

EXPERIENCE

Knowledge gained from over 50 years of making Wires for American and Foreign paper makers has led to the development of looms of our own design; wire drawn to specification in our own plant; skilled, experienced operators, and a product giving long and dependable service.

Appleton Wires
are good wires
APPLETON WIRE WORKS INC., APPLETON, WIS.

made by the plant of the Thunder Bay Paper Co., at Port Arthur, last month. Two machines running full blast with but minor breaks created the new production record. Within the 24 hours, exactly 255 tons of paper were turned out. The mill has two machines 234 and 246 inches wide, respectively. The record is more significant in view of the fact that rolls on both units were trimmed to 217 inches. The mill is now operating at practically full capacity.

The Laurentide Ottawa Division of the Canada Power and Paper Co. has resumed operations at the saw mill at Pembroke, formerly known as the Colonial Mill. The mill will employ some 250 hands, and a big cut is anticipated following large scale operations in the bush during the past winter.

Fire due to spontaneous combustion, which broke out on July 6th in the stock warehouse of the Canadian Paperboard Co., at Toronto, caused damage estimated at about $10,000, but did not necessitate shutting down the plant.

Kenneth Nichol, for the past several years sales manager in Toronto for the Interlake Tissue Mills, of St. Catharines, died last month as the result of an automobile accident. The late Mr. Nichol, although only 29 years of age, had had mill experience at the company's mill and had won rapid promotion to the position of sales manager. A few weeks previously he had been the victim of an automobile accident, but was thought to be recovering.

D. B. Chant, of the Sault Ste. Marie Division of the Abitibi Power and Paper Co., has been appointed assistant general superintendent of the Espanola Division of the company. At one time he was a resident of Espanola, as papermaker, and later was supervisor in the mill, which position he left on being appointed secretary of industrial relations at Sault Ste. Marie to the then Spanish River Paper Mills.

◆ NEW BRUNSWICK ◆

Expansion of Fraser Plants Nearing Completion

The program of plant extension embarked upon by Fraser Companies, Ltd., in 1927, will be completed during the current year by the installation of a second catalogue paper machine at the Madawaska, Me., fine paper mill of Fraser Paper, Ltd., and the construction of a bleached sulphite mill at Athol, N. B. The order for the new machine, which is to be 236 inches wide, has been placed with the Pusey and Jones Co., Wilmington, Del. These extensions will make the company and its subsidiaries a well-balanced unit for the large-scale production of high-grade bleached sulphite pulp, fine and catalogue papers, and paperboard.

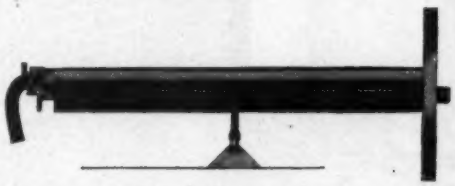
The existing catalogue-paper machine at Madawaska, which came into operation last March and is one of the largest of its kind in the world, is understood to be running at capacity on the Sears-Roebuck contract, the future requirements of which, together with other contracts, will gradually absorb the production of the additional machine to be installed.

Construction of the new 45,000-ton bleached sulphite pulp mill at Athol, near Campbellton, will enable Fraser Companies to make more profitable use of the very valuable spruce pulpwood limits held through a subsidiary on the Restigouche and tributary rivers. The output of this mill will to some extent replace the tonnage formerly available for sale from the Edmunston plant, the entire output of which is now taken in slush form by the Madawaska paper mill. The Athol mill, which is expected to be ready for operation by January 1st, 1930, is excellently situated as regards both receipt of pulpwood and other raw material and shipment of finished product by water or rail.

The announcement made by president Archibald Fraser that the water of the Restigouche River would be used in the operation of the new pulp mill has set at rest the report that the Fraser interests would erect a dam in the Christopher

SCOFIELD FELT CONDITIONER

The Scofield Felt Conditioner is a device designed to meet the needs of the paper industry. It is the result of years of concentrated study of the requirements. Its performance is guaranteed.



A dirty felt is a liability; a clean felt is an asset.

With the Scofield Conditioner you can keep your felts clean continuously. Dirty streaks and spots can be removed quickly and efficiently.

Many mills are using this method of felt conditioning. It is being used on machines making all grades of paper from tissues to boxboard.

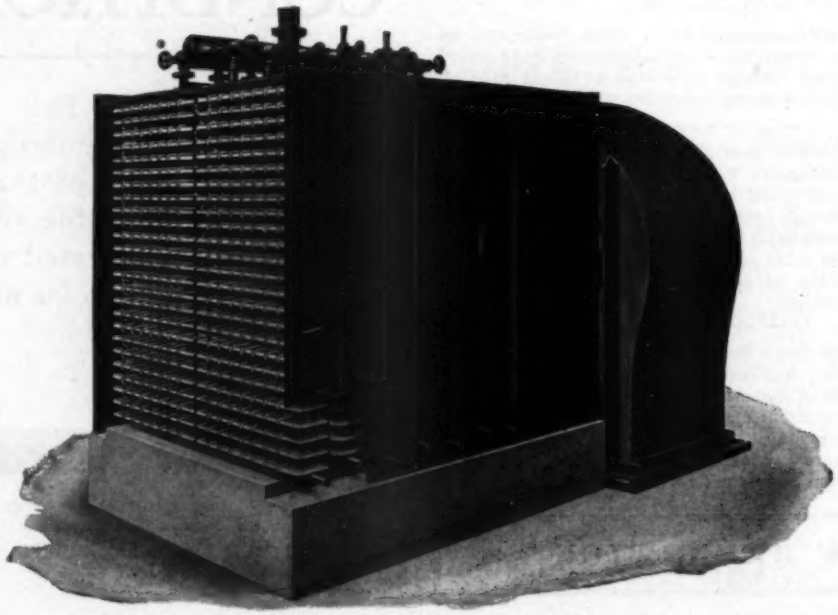
Give us an opportunity to review your felt trouble.

We will gladly send you complete particulars upon request.

GILBERT J. SCOFIELD COMPANY, INC.

408 No. Pearl St.
ALBANY, N. Y.

Stickle Blast Coil Heater or Economizer Will Dry Your Felts With Hot Air



STICKLE air cooled condenser maintains a vacuum of 10 to 15 inches on the return line of your paper machine, returns condensate to the boiler room as hot as it can be handled with a pump without the admission of cooling water. Will heat 1000 cubic feet of air per minute for every ton of paper dried per day, furnishing hot air in the pit to dry the felts and absorb the vapor under the dryers, making a direct saving of at least 15 per cent in steam consumed for drying the paper and ventilating the machine room. This can be done at a moderate cost. Are you interested? Complete plans furnished without charge.

Stickle Steam Specialties Co.
INDIANAPOLIS, IND.

AUTOMATIC STEAM CONTROLS
BLOWING THROUGH DRAINAGE SYSTEMS
COMPLETE LINE STEAM SPECIALTIES

Brook and get the water from that source. Tests made of the water of the Restigouche showed that it will meet all the needs in the production of bleached sulphite in the mill now under construction.

The construction of the new mill is being financed by the sale of $3,000,000 of 6 per cent, 3-year convertible collateral trust gold notes, which are a direct deposit and pledge of $3,100,000 first mortgage sinking fund gold bonds of the Restigouche Co., a Fraser subsidiary.

Construction of I. P. Co. Mill Progressing

Construction of International Paper's new mill at Dalhousie, which is being carried out by the Domill Construction Co. of Canada, Ltd., a wholly-owned subsidiary of International Paper, is well advanced and up to schedule. The rock fill retaining wall, which will retain the yard fill and act as sea wall for the property, has been completed. The foundations for the mill are complete. All of these foundations extend to bed rock and go to basement floor level, which is approximately twelve feet above the original surface of the tidal flat which covered the entire site of the mill and mill yard. The necessary fill to basement floor level was made by suction dredge, which pumped a mixture of clay and gravel from the Baie des Chaleurs. The mill yard is being brought up to grade in the same way, and this fill has been more than half placed.

All the timber work required for building construction has been received by steamer at the company's dock and is being installed. All of the main items of building construction, such as concrete, structural steel and brickwork, are more than half completed and at the present rate all the mill buildings will be roofed within two weeks.

The installation of operating equipment, which is also being handled by the Domill Co., is under way.

The large saw mill of the J. B. Snowball Co., at Chatham, and some 320 square miles of Crown timber leases have been taken over by trustees representing a holding company for the Fraser Companies and the International Power and Paper Co. Although no official announcement has been made, rumor has it that a pulp mill will be erected at Chatham, and it is stated that the contract has already been awarded to the Domill Construction Co., which is at present constructing the mill of International Paper Co. at Dalhousie. This mill, it is reported, would produce sulphite suitable for the manufacture of rayon.

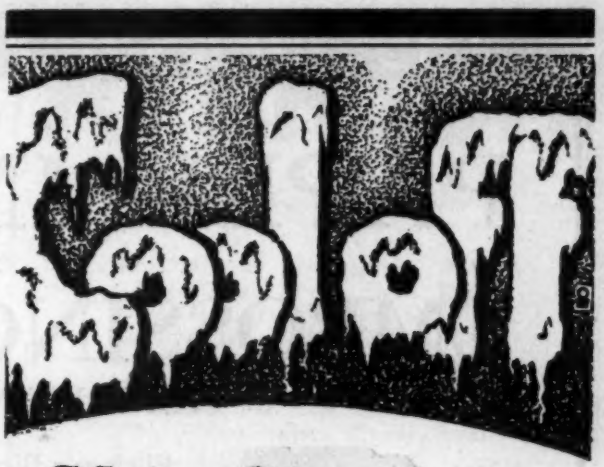
❖ NOVA SCOTIA ❖

Mersey Paper Aquires Clyde and Sissiboo Co.

The Mersey Paper Co. has bought the Clyde and Sissiboo Pulp Co., which has been in the hands of the receiver since the early part of 1928. The sale of the properties was effected for $200,000 and the proceeds, after allowing for various expenses incurred, are expected to allow for a distribution to the 6½ per cent bondholders amounting to about 38 cents on the dollar. The properties consist of two groundwood mills, at Port Clyde and Weymouth, having an annual capacity of 13,000 tons of groundwood, 31,646 acres of free-hold lands and 44,936 acres of leasehold timber limits, and water powers on the Clyde and Sissiboo rivers. The company has been partly in operation, but the profits from its properties, under present conditions of the groundwood market, have not been such as to permit any reasonable profit.

Announcement is also made that Digby County Power Board has purchased the Clyde and Sissiboo power plant for a consideration of $50,000.

A novel type of steamer has been designed and is being built for the Mersey Paper Co. The vessel was designed by Walter Lambert of Montreal and the contract placed with Earle's Shipbuilding and Engineering Co., Ltd., of Hull, England. The new vessel is to have a capacity for 4,300 tons of paper, which will be loaded into five watertight holds through special large hatches. The vessel and the loading



Meier Nu-air
TRADE MARK REGISTERED

Fans will keep your men fit and up to top-notch efficiency, and reduce depreciation of plant and machinery from steam and acid fumes.

All - aluminum portable cooler.

Meier Nu-air Fans embody features of design and construction that no other fans have. Note the cup-shape ring and overlapping of the blades. This increases air delivery, prevents back pressure and gives you a fan that is actually larger than rating states. Meier Nu-air Fans are built entirely of aluminum and equipped with specially designed, totally enclosed ballbearing motors. At the left is the Meier Nu-air All-Aluminum Portable Cooler with adjustable head. Used for cooling men or accelerating drying processes.

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MEIER ELECTRIC & MACHINE CO. Inc. 1904

136 S. Meridian St. Indianapolis, Ind.

THE JOHNSON FRICTION CLUTCH

As Used in the

PAPER INDUSTRY

On an

EMBOSSING MACHINE

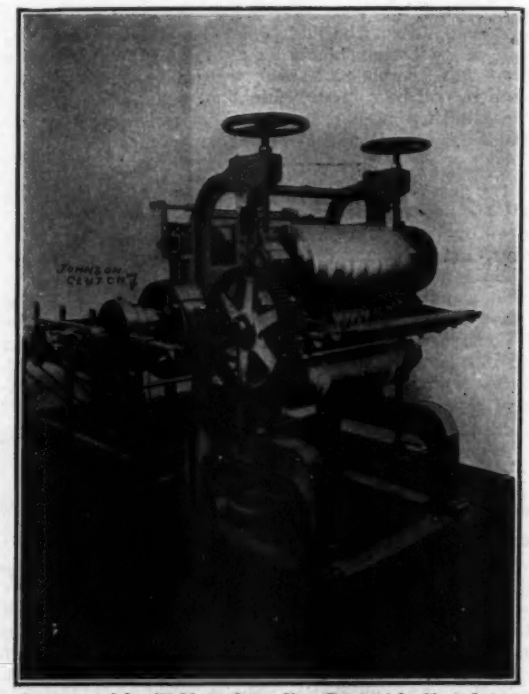
of THE JOHN WALDRON CORP.

Single Clutch Exterior

Fleet as a Bird on the "Start". Certain as Time in "Performance". Quick as Lightning on the "Stop". A Smooth Compact "Safety" Clutch That's the

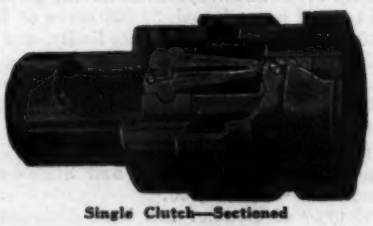
JOHNSON

Single clutch with pulley mounted



Courtesy—John Waldron Corp. New Brunswick, New Jersey

A No. 11 JOHNSON Single Friction Clutch is used on the main drive and is operated by hand lever. This Machine is used for making of lace paper principally for shelves.



Single Clutch—Sectioned

WRITE FOR CATALOG "P.I.—8"

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

apparatus are designed so that there will be the least possible chance of damage to the paper.

For the first time in history, the forests of Nova Scotia are closed to the public. This measure, which has been adopted in Quebec and New Brunswick for some time, is made necessary by the tinder-dry condition of the forests and the carelessness of many who enter them at this season of the year. Entries can only be made on a permit.

BRITISH COLUMBIA

Fire destroyed the plant of the Westminster Paper Mills on July 13th, and spread to a part of the plant of the Triangle Chemical Co. causing $250,000 damage there. Three firemen were overcome by fumes, but recovered after treatment. Much expensive machinery, recently installed, and large stocks of paper were destroyed. About 100 men will be temporarily out of work.

It is stated that a new pulp mill, to be known as the Flathead Paper Co., is to be established at Fernie. The company is to be capitalized at $5,000,000, and most of the stock has already been subscribed. Negotiations are being carried on between the promoters and the Government for timber areas and are expected to be concluded shortly.

Word that an associate of Senator Charles G. Heifner of Seattle was willing to raise $750,000 to help finance a pulp mill at New Westminster has been received by Mayor A. Wells Gray, M. L. A., from the Washington State Senator. It is now definitely known that it is Senator Heifner and allied interests who are behind the proposal to establish a pulp mill on Poplar Island, in the Fraser River beside New Westminster. An option on this site has been secured by the city for one year from the Government with a view to assist in realizing this project. The Poplar Island plant is distinct from the plant to be built by the Cole-Atterbury interests at Queensborough.

MANITOBA

Enlarging Groundwood Mill at Pine Falls

Additional grinders are being installed by the Manitoba Paper Co. at Pine Falls, according to C. C. Irvine, general manager of the company. These additional grinders, with the building housing them, will cost about $250,000. Work has already commenced on the excavation and concrete work, and it is anticipated the work will be completed by October. While the increased grinder capacity does not increase the capacity of the paper mill, it balances the entire plant and will permit of the mill operating at full capacity whenever that is necessary, the grinding capacity of the original plant having been somewhat less than that of the paper mill.

The company was the host, last month, to a party of about 300 Winnipeg business men who visited the plant and model town at Pine Falls, on the Winnipeg River. In the party were ten members of the Manitoba Legislature, as well as representatives from the boards of trade of other towns. The visitors were entertained at a luncheon, after which they witnessed the papermaking process from the raw logs to the loaded cars.

Robert B. Marshall, well known conveyor sales engineer, has joined the Chain Belt Company's Conveyor Division with headquarters at the company's New York City office at 50 Church St. Mr. Marshall has spent the past 21 years in the conveyor business. In addition to the complete line of Rex Conveyors, he will handle the belt conveyors, glass batch handling equipment and silo storage system manufactured by the Stearns Conveyor Company of Cleveland, a division of the Chain Belt Co. W. H. Quinn is the New York district manager for the company.

RYERSON

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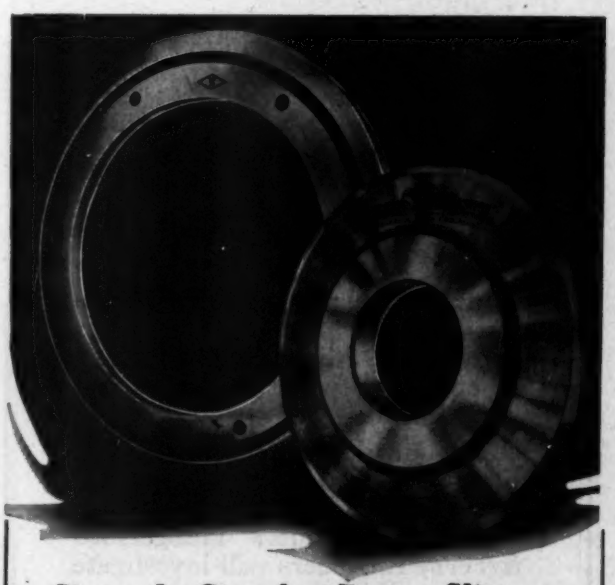
Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL



Simonds Circular Paper Slitters

Edge-holding—that explains why mills in every section are turning to SIMONDS for the Circular Slitters that give them better work and more production. Simonds Slitters are true to form and perfect mechanically.

Order them from any Simonds factory or service station.

Simonds Saw and Steel Company

ESTABLISHED 1832—FITCHBURG, MASS.

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VISIBLE ACTION

MEANS FOR HAND TESTING

There need never be any doubt about the working condition of a Davis Pressure Regulator. Its action is completely exposed to view and may be hand tested by merely lifting the weight beam. Know your equipment.

G. M. DAVIS REGULATOR CO.
414 Milwaukee Avenue, Chicago, Illinois

Balanced Valve Float Valve Steam Valve Back Pressure Valve
Stop and Check Valve Exhaust Relief Valve Non-Return Valve
Butterfly Valve Float Box with Control Valve

DAVIS AUTOMATIC VALVE SPECIALTIES

PI8—Gray

THRU THE YEARS

Fig. 478

SINCE 1846, when Powell Valves were first introduced to the engineering public, the high standard of Powell efficiency has never varied.

Upon exacting workmanship, accurate testing and continual inspection, and upon materials depends the long life and efficiency of Powell Valves.

THE WM. POWELL CO.
2521-2531 Spring Grove Ave.
CINCINNATI, OHIO

Change to--Standardize on

POWELL VALVES

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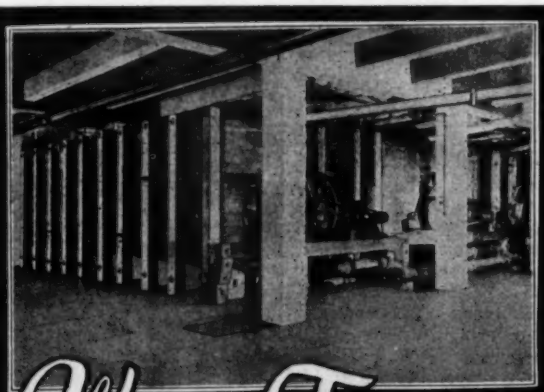
In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.



Wood Tanks

are not Corrodable

Half-Round Stuff Chests made of 3-inch Genuine Red Gulf Cypress with heavy yellow Pine bracing. Built and erected in the Frank Smith Paper Mill at Middletown, Ohio.

The Hauser-Stander Tank Company
Cincinnati Ohio

Wood tanks for every purpose in the paper mill, accurately made and only the best material and workmanship are used in their construction.

ENGLAND

Monthly Report on Paper Trade

With a new Government established and now getting under way, members of the paper trade are awaiting with some interest, if not concern, the decision of the powers that be in regard to safeguarding. The new Chancellor of the Exchequer is reported to be in favor of the total abolition of all protective duties as soon as the opportunity arises. The British wrapping papermakers who have enjoyed the advantage of protective duties on foreign wrappings since May, 1926, are naturally anxiously waiting to know the course which the new Government will take, for the Act has given them a sense of security which has justified capital expenditure and big business committments which, with the turn of the wheel may prove to be bad investments.

British wrapping papermakers did not feel the benefits of the protective duty on foreign wrapping for some nine months after they had been imposed, for the country was in the throes of a general industrial strike immediately after the passing of the Act, and were further handicapped by the large imports which were rushed through immediately prior to the imposition of the tariff, in order to get as much as possible through the customs free of duty, and to take advantage of any increase in price that might immediately follow.

For the year ending April 30th, 1929, the decreased tonnage of imported wrappings compared with 1925 was 11,390 tons. Following the imposition of the tariff, the price of imported wrappings dropped on an average 26 shillings per ton, and since then the average price has been 50 shillings per ton less than it was before the tax was imposed. This brought the selling price of foreign paper as nearly as possible equal to that for the best British wrappings. There has also been a reduction of £1 per ton in British wrappings, so that the best British krafts are now slightly lower than the foreign competitive lines.

The duty has by no means been generally popular in the paper trade, although it must be admitted that most of those who have been strong in their opposition have been either big importers or agents for foreign mills, some indeed are reputed to be financially interested in Continental wrapping mills.

In favor of the duty, it may be said that approximately £500,000 has been invested either in new plant and machinery or in bringing existing plants up-to-date, which has resulted in considerable employment in the engineering trade, and a big increase in the consumption of coal. Bulk orders for kraft are now placed with British mills, whereas in the past it was customary to pass orders for single ton lots. This has all brought about economy in manufacture which has enabled the makers to reduce their prices by £1 per ton.

Imports and Exports

Below are set out the values of the paper trade imports and exports in June, together with the increases or decreases as compared with the corresponding month of the two previous years:

IMPORTS

	June, 1929	Inc. (+) or Dec. (—) as compared with 1928	as compared with 1927
Paper Making Materials	£1,041,630	+13,905	+ 39,286
Paper and Cardboard	£1,573,777	+99,594	+218,639

Quantities of same articles imported:

	June, 1927	June, 1928	June, 1929
Woodpulp, tons	124,137	134,213	121,449
Paper, cwt.	1,451,003	1,635,913	1,812,962

EXPORTS

	June, 1929	Inc. (+) or Dec. (—) as compared with 1928,	as compared with 1927
Papermaking materials	123,911	— 6,766	+14,668

"You Can Do It Better With a Biggs"

Your particular problems of Cooking and Bleaching can be met successfully and economically with Biggs Rotary Digesters.

Paper Mill Engineers all over the United States know and recommend Biggs Rotaries and are adapting them to special processes.

The old straw cooking rotary that has so successfully served the Industry for years is an entirely different type than the new modern specially designed Rotary Digester with its baffles, strainers, steam distributing system, washing system, etc.

You will find a Biggs Rotary to fit your problems.

BIGGS ROTARY BOOK will be gladly sent upon request.

The Biggs Boiler Works Company
Akron, Ohio

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Western Sales Office
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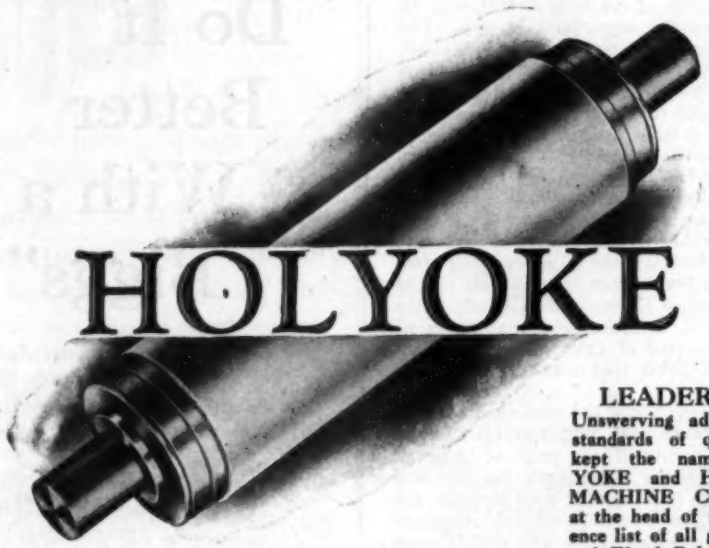
Chicago, Illinois

"You can do it Better with a Biggs"

The Biggs Boiler Works Co. Akron Ohio

PIONEERS SINCE 1863 IN THE MANUFACTURE OF PAPER MILL AND WOOD PULP MACHINERY

RESILIENT



LEADERSHIP
Unswerving adherence to standards of quality has kept the names HOLYOKE and HOLYOKE MACHINE COMPANY at the head of the preference list of all good Paper and Wood Pulp manufacturers.

ALL HOLYOKE Cotton and Paper Rolls are *Resilient,*—to just the right degree. The long experience of HOLYOKE Engineers makes it possible to attain *uniform* resiliency. This in turn helps to assure a higher quality paper of whatever grade you are running,—uniform in finish throughout.

Write HOLYOKE MACHINE COMPANY, Holyoke, Mass., Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

Paper and Cardboard	612,903	—184,848	—57,511

Quantities of same materials exported:

	June, 1927	June, 1928	June, 1929
Papermaking Materials, tons	13,490	18,269	15,718
Paper and cardboard, cwt.	295,804	403,438	317,084

Inveresk Interests Declare Dividends

The following interim dividends have been declared by subsidiaries of the Inveresk Paper Co., Ltd. (the large group of paper interests under the organizing control of William Harrison, to which reference has been made from time to time in recent reports).

Carrongrove Paper Co., Ltd., Caldwell's Paper Co., Ltd., and Westfield Paper Co., Ltd., five per cent actual on ordinary shares. Annandale & Son, Ltd., seven and a half per cent actual on ordinary shares. Chalmers Paper Mill, Ltd., twenty per cent actual on ordinary shares. Olive and Partington, Ltd., Provincial Newspapers, Ltd., and Turners Paper Mills Co., Ltd., five per cent actual on ordinary shares.

❖ NEW YORK CITY ❖

Receivers for Tissue Mills

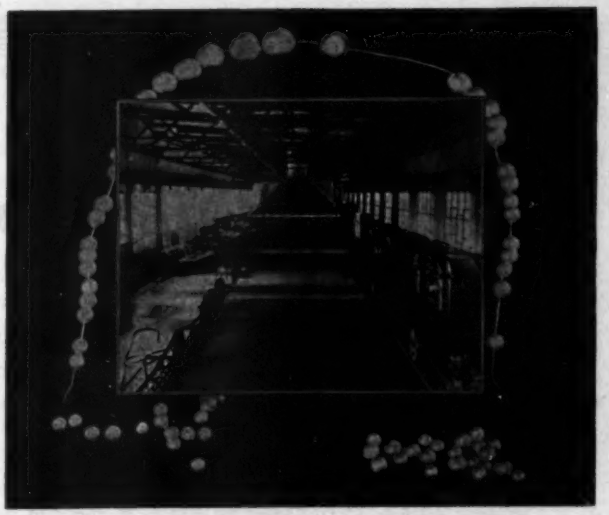
Judge Bondy in the Federal Court, New York City, on July 24 appointed the Irving Trust Company and Frank W. Mapes equity receivers under bond of $50,000 for the Universal Crepe & Tissue Mills, Inc., of Salisbury Mills, N. Y., formerly the Holden Paper Co. The receivers were named on the complaint of the Moore & White Co., a creditor for $10,241. The assets are stated to be $895,927, including plant and machinery appraised at $605,529, while the liabilities, exclusive of capital stock, amount to $361,448. The business was founded many years ago and the company has established a valuable good-will and controls trade-marks, including Soizette and Petite. Irving Worthman, president of the corporation, assented to the appointment of the receivers to conserve the assets pending an adjustment. Shortage of quick assets is ascribed as the cause of the embarrassment.

The mills manufacture tissue and crepe paper specialties, toilet paper, and paper towels and napkins.

A petition in bankruptcy was filed a few days ago against Julius Larschan, doing business as J. Larschan & Co., dealer in paper and paper products at 54 East End avenue, New York, by Alfred Bleyer & Co., creditor for $2,000; the Yorkville Paper Co., Inc., $3,800, and Jacob Scherzer, $1,100. Later the concern filed schedules in bankruptcy showing liabilities of $23,396, and assets of $8,581, main items of which are accounts, $4,310, and stock, $3,880.

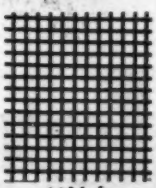
According to reports current here, the Certain-teed Products Corp., large manufacturer of roofing paper with main offices in St. Louis and plants at several points through the country, is planning, through an associated Georgia company to erect a new roofing plant at Savannah, Ga., to produce smooth and slate surface roofing and miscellaneous products. The new mill, it is said, will have a capacity of 1,360,000 squares of roofing per year, and will cost about $600,000. Fifty acres of land are said to have been acquired, providing space for future additions when necessary.

Castle & Overton, Inc., importers of wood pulp and other papermakers' supplies, have moved their offices from Suite 1020 in the Fifth Avenue Building, 200 Fifth avenue, New York, to Suite 1040-48 in the same building on the same floor where they are occupying considerable more space and where elegant offices have been fitted up for the comfort and convenience of the company's executives and staff and its customers. New furniture and equipment, handsome rugs and carpetings and other decorations make the offices most attractive. Private offices for the officers and executives of the concern are provided, as well as for the shipping, book-



You can't keep beads on a broken necklace!

60 Mesh Fourdrinier Wire



14 Mesh Cylinder Wire

12 x 64 Mesh Corduroy Cloth

ONE break in a necklace will scatter the beads!

One break in a Fourdrinier wire will scatter production, interest and profits!

So much is at stake when you purchase a Fourdrinier wire—not only in the service and satisfaction of the wire itself, but in the continuous operation of your Fourdrinier machine; in the quality of your paper; and in the profit return from your entire mill!

The best and most dependable wire is by far the most profitable investment—that's why so many superintendents specify Tyler Fourdrinier Wires.

Tyler wires are woven from a specially-treated, tough and resilient wire. They run straight and true—they lie flat and smooth on the machine—they assure long, continuous service and a minimum of time lost for repairs.

Whatever kind of paper you make—on whatever type of machine—there is a Tyler wire which will assure you greater efficiency and added profit.

TYLER WIRES

for screening WOOD CHIPS

HUM-MER *Electric* SCREEN

Send for literature

The W. S. TYLER COMPANY
CLEVELAND, OHIO

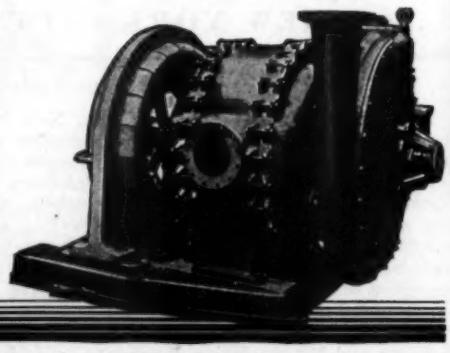
Constant air capacity
...even when pumping water

WATER and air are handled separately in the Jennings Flat Box Pump. A turbine air rotor and a centrifugal water impeller are built on the same shaft. For this reason, air capacity is not decreased even when large volumes of water are being discharged against a head.

Jennings Flat Box Pumps operate at low cost, too. No extra power is needed to maintain flat box vacuum when pumping water. Direct connection with synchronous motors eliminates the power losses that always occur in chain, gear or belt drives. Send for descriptive bulletins.

JENNINGS
FLAT BOX PUMP

Capacities from 150 to 5000 g.p.m. of water together with 80 to 2300 cu. ft. per min. of air at 10 in. vacuum.



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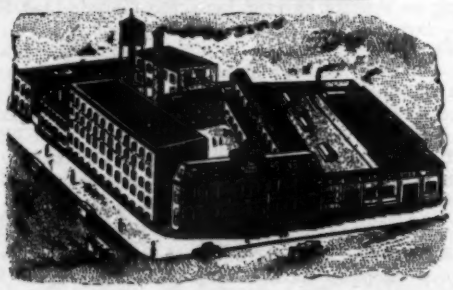
THE WM. CABBLE EXCELSIOR WIRE MANF'G CO.

MANUFACTURERS OF

Backing Wires
Cylinder Faces & Washer Wires
Red Brass Brush Wire

SUPERIOR FOURDRINIER WIRES



For 80 Years we have specialized in the manufacture of brass Fourdrinier Wires, Cylinder Covers, Washer Wires and Save-all Wires as well as Phosphor Bronze Fourdrinier Wires and Cylinder Covers.

Established 1848

Offices and Warehouses:

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NEW YORK

keeping, sample, stenographic and other departments, and there is also a spacious and beautifully appointed reception room.

L. Hyman & Sons, paper dealers, have moved from 35 West Houston street to larger and more conveniently located quarters at 102 Prince street, at the corner of Greene street, New York.

The New York Blue Print Paper Co., New York City, has been incorporated under New York State laws with a capitalization of $10,000. I. Konigsberg, of 2 Rector street, New York, is representative of the new corporation.

John C. Cook

John C. Cook, for 14 years manager of the Mail and Express and its successor, The Evening Mail, of New York, and recently in the sales department of the St. Maurice Valley Paper Co., New York, died suddenly on July 6 in the company's office at 230 Park avenue. His body was found by the watchman making his rounds at noon. Heart disease is believed to have caused his death.

Mr. Cook was born in Morrisville, Pa., 62 years ago, and had spent most of his life in the newspaper business. Before joining the St. Maurice Valley Paper Co., he was at times business manager of the Journal of Commerce, of the New York Telegram, and of The Graphic.

E. G. Bullis, who was recently appointed sales manager of the Groveton Paper Co., of Groveton, N. H., will in the future be permanently located in the New York office of the company at 11 West Forty-second street.

The Harris & Paul Paper Co., of 59 Bank street, New York, among the well-known paper merchandising firms in the metropolitan area, has been incorporated under New York State laws with a capital of $10,000 of preferred stock and 1,000 shares of common stock.

❖ NORTHERN NEW YORK ❖

Joseph A. Quinlan of New York and Watertown, traffic manager of the St. Regis Paper Co. and its associated companies, has been elected chairman of the pulp and paper committee of the Atlantic States Shippers Advisory Board. This is one of the highest honors that could be paid a member of the Shippers Board as the committee is one of the most important selected each year.

Stanley Cheeseman who has been employed as construction engineer at the Algonquin Paper Co. mill at Ogdensburg, has resigned to take a position with the Gould Paper Co. at Lyons Falls.

Ralph S. Maltby, vice president of the St. Regis Paper Co., and Corwin T. Jewell, general manager of the company, inspected the St. Regis newsprint mill at Deferiet on July 11.

Ralph E. Skinner, secretary of the Harmon Paper Co. of Brownville, was recently injured in an automobile accident while in New York city on a business trip. Mr. Skinner received two broken ribs and numerous cuts and bruises when a taxicab collided with an elevated railroad pillar.

Nicholas Phair of Dexter, was recently painfully burned by steam at the plant of the Dexter Sulphite, Pulp & Paper Co. His face, neck and chest were scalded while he was taking the top off a digester.

Erection of machinery for the manufacture of paper bags will be started in the Bates Valve Bag Corporation plant, now under construction at Oswego, about Sept. 1, according to Alfred O. Mortenson, chief engineer of the Tag-

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FELTS
for
Longer Better
and Most
Economical
SERVICE

That is no sweeping platitude. It is true—absolutely true. Mills that have taken the slight trouble required to investigate can vouch for the accuracy of the statement—which mills, by the way, are today Orr users and Orr boosters.

The line is complete—contains the exact length, width and texture your particular machine must have.

An inquiry will bring an Orr felt specialist qualified to suggest the particular felt that will remove the most water—AND DO IT FASTEST.

The Orr Felt & Blanket Co.
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AT LAST WE CAN OFFER THE JAGENBERG, DUSSELDORF, GERMANY, ROTARY ROLL WRAPPING MACHINE for shell packing for the protection of mill rolls. Damage during transit impossible; cheaper than crate packing; insuring delivery of your rolls to the Eastern or foreign market in perfect condition. Full particulars upon request.

GIBBS-BROWER COMPANY, Inc.

Paper and Pulp Mill Brokers

261 Broadway, New York City

OUR MOTTO—"Service First"

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

Pittsburgh Piping & Equipment Co.

PITTSBURGH, PA.

Paper Mill Machinery

One No. 2 Bird Screen

Two Walpole Screens used only two years

One 156" Hamblet Duplex Cutter and Layboy, used very little

One 72" Kidder Slitter

One 130" M. & W. four drum Winder

One 134" P. & J. Uniform Speed Reel

One 76" S. & W. Under cut cutter

Two 69" S. & W. Under cut cutters

For Sale By:

FRANK H. DAVIS COMPANY

175 Richdale Avenue, CAMBRIDGE, MASS.

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

WANTED—Engineer Draftsman, experienced in the design of structures and equipment layout for paper and pulp mills. State age, education, experience, married or single, salary required, and references in first letter. Position is permanent. Address Box 161, The Paper Industry.

WANTED—Mechanical Engineer Draftsman—thoroughly experienced in the development and design of automatic machinery. Must be engineering graduate with ingenuity and vision. State age, education, experience, married or single, salary required and references in first letter. Position is permanent. Address Box 162, The Paper Industry.

WANTED—Engineer with knowledge of paper and pulp mill process. Must be of the executive type with ability to handle the development and planning of an entire project. This position can be filled by either a Chemical, Mechanical, or Civil Engineer and will be permanent. A man with ability to visualize and plan the process in terms of equipment, machinery and buildings, is required. We can offer exceptional opportunities to the Engineer with the right personality, ability, and experience. Address Box 163, The Paper Industry.

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Here is an

Electric Hoist

that makes a Chain Block seem an extravagance.

ROEPER Type "R" Hoists are built in capacities from 500 lbs. to 4000 lbs. with or without trolleys—Cord or Push Button Control.

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Member of Electric Hoist Manufacturers Association

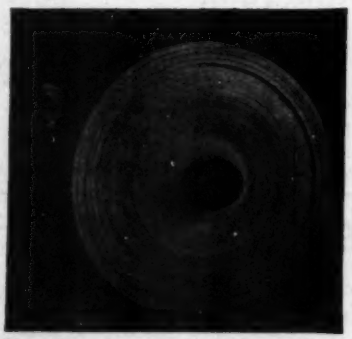
gart Paper & Bag Corporation, who has charge of the electrical and mechanical installations in the new plant. Unit motors, one for each machine, will be installed and the installation will be one of the most modern in this section. Machinery will be shipped from the Bates plant in Chicago which the corporation is abandoning in favor of the Oswego location. The electrical equipment will be in place and completed in about three months.

A certificate of incorporation of the Morristown Terminal Corporation was filed in the Jefferson county clerk's office in Watertown on July 23. The concern will deal in timber, pulpwood and pulpwood paper. It will construct wharves and docks to handle materials at Morristown on the St. Lawrence river. The officers and directors are three Watertown men: James E. Campbell, J. Victor Baron and J. Munson Gamble. The offices of the Corporation will be in Watertown. There will be 3,000 shares of stock, without par value.

Fire of unknown origin swept the finishing room of the Gould Paper Co. mill at Lyons Falls on July 5. The fire was confined to the finishing room, which is 175 feet long by 50 feet wide. A quantity of paper was ruined by the fire and water. Repairs were made immediately under the supervision of G. M. B. Williams of Lyons Falls, general manager of the Gould Paper Co. The loss was covered by insurance.

The court of appeals has reversed the decision made by Judge Frank Cooper in Federal Court in December, 1926, in the case of the Wood Grinding Service Corporation against the International Burr Corporation, both of Watertown. The decision now makes it legal for the patent as well as the sales of the International Burr Corporation to continue. The action was brought by the Wood Grinding Service Corporation in August, 1922, for alleged infringement of patents and to restrain the defendant from making further sales of patent product, a steel burr used in keeping the surface of pulp grinding stones in uniform condition.

John Murray of Waterville, Me., has accepted a position as assistant manager of the production department of the Racquette River Paper Co. of Potsdam. Before coming to Potsdam, Mr. Murray was employed for a number of years as division superintendent of the Hollingsworth & Whitney Paper Co. at Waterville.



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Branches: New York Chicago Pittsburgh San Francisco

STEEL PLATE CONSTRUCTION
Riveted and Welded
Specialists in PAPER DIGESTERS and Heavy Plate Work
RITER-CONLEY COMPANY
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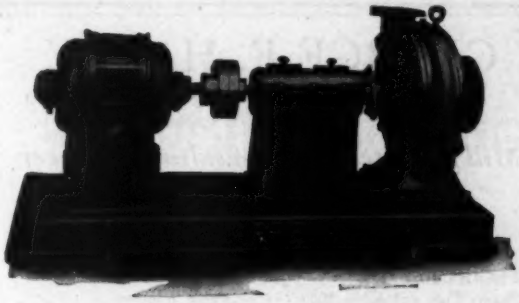

Warren Stuff Pumps *maintain* their efficiency

Many pumps show a noticeable drop in efficiency shortly after they are put in service, due to wear. Warren Stuff Pumps have easily renewable case liners which preserve a close running clearance between the impellers and sides and insure sustained high efficiency during the long life of the pump.

Designed by engineers throughly familiar with pulp and paper mill conditions, Warren Stuff Pumps will handle 6% clean stock efficiently, smoothly and without clogging. Let us tell you what they have done handling your kind of stock. Write for complete information.

Warren
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The Champion Coated Paper Co., Hamilton, will spend something over a million dollars for the erection of a new power plant. The plans call for one B & W boiler and two 7500 k.w. turbines. The company also will build an addition to the coating mill finishing department.

The Peerless mill of the Mead Pulp and Paper Co., Dayton, has been discontinued. The property has been leased to the Frigidaire Corporation, of Dayton, a subsidiary of the General Motors Company. All of the papermaking equipment and machinery has been shipped to Chillicothe, for use in the recently enlarged papermaking plant there of the Mead Pulp and Paper Company. Most of the former Peerless Mill employees have become a part of the Chillicothe organization.

The Miamisburg Paper Co., Miamisburg, is proceeding with the electrification of its mill. Installation consists of complete complement of motors, eliminating all engine drives. A 1000 k.w. turbine generator is being installed to generate all power requirements, with turbine of automatic extraction type to supply the entire process steam requirements. An especial feature is the variable speed, single motor paper machine drive giving a speed variation of 7 to 1. M. V. Brooks is superintendent. H. S. Taylor, consulting engineer, Dayton, is engineer.

The Sorg Paper Co., Middletown, has announced it will erect a $10,000 addition to the present beater room of the mill. Plans for the structure have been submitted and erection expected within the next month so that the new addition will be in use by late fall.

Sherman Perry, assistant publicity director of the American Rolling Mill Co., has been appointed manager of sales of the Crystal Tissue Paper Co., Middletown. This position was made vacant when Mark H. Lund received the commission of representative of American paper mill companies to Norway. Mr. Perry has been connected with Armco 10 years and during that time published a book entitled "Making Letters Talk Business".

Honorary Degrees for Professor McKee

Honorary degrees are falling thick and fast on Prof. Ralph H. McKee, formerly of the Research Department of the Oxford Paper Company.

In addition to those already in his possession he is now the proud recipient of an honorary degree of Doctor of Laws from the University of Maine, where he was formerly in charge of the department of chemistry and chemical engineering, and Wooster College has conferred upon him the degree of Sc.D., likewise honoris causa. He studied for his bachelor's degree at Wooster College, Ohio.

Yale & Towne Acquire Stuebing Cowan

An important announcement in industrial circles is the contract by Yale & Towne Manufacturing Co., Stamford, Conn., to purchase the assets and goodwill of The Steubing Cowan Co., of Cincinnati, Ohio and Holyoke, Mass., makers or hand lift trucks.

According to a statement issued from the office of the president of The Yale & Towne Manufacturing Co., the purchase of The Stuebing Cowan interests will add a complete line of single and multiple lift hand trucks to the company's already large line of devices for the handling of materials. Sale of the Yale & Towne line of material handling devices will continue to be under the supervision of James C. Morgan, and arrangements have been made under which the executive personnel of The Stuebing Cowan Co. will enter the services of Yale & Towne, Walter C. Stuebing acting as assistant to Morgan, in charge of all truck sales, and William Stuebing continuing to act as superintendent of the plant in Cincinnati.

RHOADS TANNATE WATERSHED BELTING

"CONSIDERABLY BETTER SERVICE"

THIS is the report on two Rhoads 2-ply Tannate Watershed Belts that replaced 3-ply oak belts on beaters in a Minnesota paper mill.

The oak belts slipped at times enough to "burn," and wore out rapidly.

The Tannate Watershed Belts even when the beaters are loaded with heavy stock carry the loads steadily without appreciable slip.

The much longer life of Tannate Belts and their ability to transmit decidedly more horse-power without slipping make them "considerably better" for paper mill service than most other makes of belting.

They are always sold under the Rhoads service guarantee. This leaves you to be the judge of whether your purchase is profitable. On this basis may we send you a Rhoads Tannate Watershed Belt for one of your hard drives?—Or would you like one of our men to call?

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Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

The Delthirna Rosin Solution Process

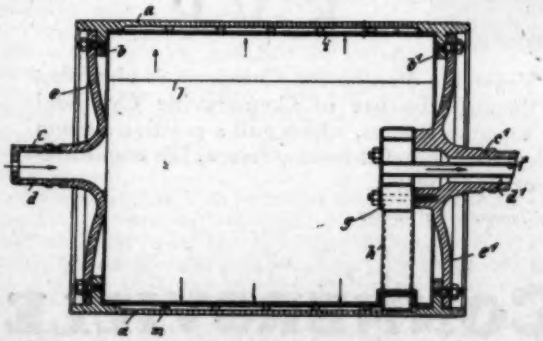
THE principles on which this process is based are discussed in considerable detail. The apparatus required for carrying it out on a practical scale is described, and the various advantages of the process are given, such as uniformity of the product, saving in rosin, etc. The article is accompanied by thirteen illustrations which are in the form of curve sheets, halftones of apparatus and the like. The article is about the most thorough on this subject that has appeared to date. Technologie und Chemie der Papier und Zellstoff-Fabrikation, volume 26, pages 1 to 8.

Hemicellulose in Pine Wood and Behavior During Digestion

WHEN pinewood, containing hemicelluloses, is subjected to hydrolysis at not too high a temperature, then only a portion of the hemicelluloses goes into solution. When the heating is not prolonged for too long a time, then any noteworthy decomposition of the dissolved sugar need not be feared. The cellulose remains intact. The author discusses the methods of analyzing the waste liquors to determine the nature of the sugars therein and from that to establish the nature of the original hemicelluloses. Results are given in detail in the original article. The results indicate that the assumptions made up to the present time regarding the actual cellulose content of pinewood are lower than what the author obtained. When strong cellulose is cooked, then approximately 75 per cent of the hemicelluloses go into solution while 25 per cent remain in the pulp. The differentiation between easily hydrolyzable and difficultly-hydrolyzable hemicellulose is not a sharp one. When the digestion is pushed hard, then a certain amount of the latter goes into solution. This investigation affords some additional information on the composition of pinewood and the yield of pulp as well as on the factors that govern this yield during the sulphite digestion process. E. Haegglund, Svensk Papp. Tidn., volume 31, pages 572ff.

Drying Cylinder for Paper Machines

THE jacket of the cylinder (a), which is shown in the accompanying illustration, is provided with a projecting flange (b) at one end and another flange (b') at the other end.

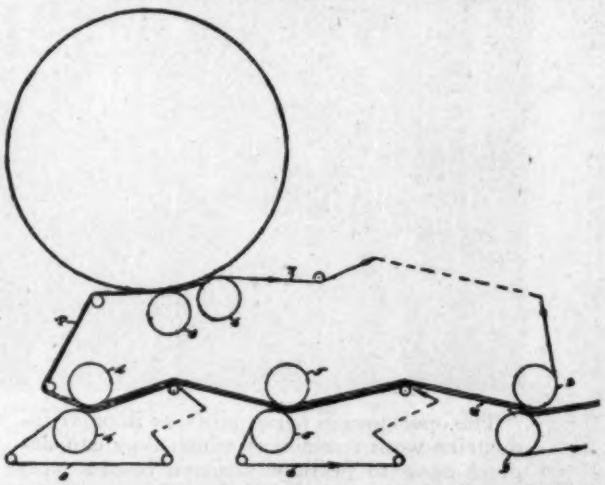


The shaft (c) is provided with a central bore (d) for the admission of the steam and a section (e) by means of which it is fastened to the flange (b). The second shaft stump (c') is provided with a disc (e'), which also serves to fasten this shaft to the flange (b'), and the central bore (d') is connected with a pipe (f) which serves to remove the water of condensation. The inner end of the shaft stump (c') is provided with a scooping device (g) which acts to scoop the water collected in the bottom of the cylinder and discharge it through the pipe (f).

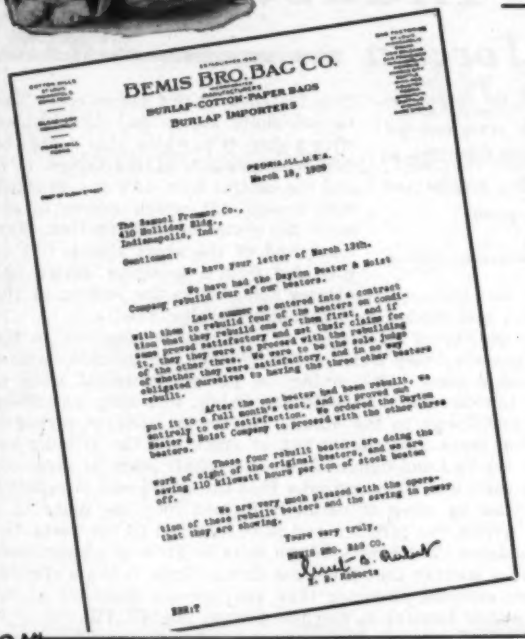
The novelty of the design of the cylinder consists in the fact that the inner walls of the cylinder are provided with a perforated sheet metal lining. A perforated metal strip of small thickness is used with the lining, this strip extending from one flange to the other. This metal strip is arranged in spiral manner so that it can be stuck into the cylinder between the two end flanges before the shaft pump is arranged at the same end of the cylinder that the spiral was introduced. The rolled up strip of metal is formed into the shape of a drum within the cylinder and it is fastened to the parts (k) and soldered. The length of the metallic strip is proportioned in such a manner that the drum formed from it has a slightly smaller external diameter than the internal diameter of the cylinder. E. Luetschen, German Patent No. 472,713.

Improvement in Papermaking Machines

THE papermaking machine which is patented in French Patent No. 651,995 by E. A. Ohlin and F. Oskar (Sweden), is of the type that contains a single drying cylinder and a moist press roller mounted in front of this cylinder and working with an upper and lower felt. The press arrangement is generally constituted of a pair of rollers which act as press rollers. The disadvantage of this arrangement is that the paper web is dried only to a slight degree before it arrives at the drying cylinder, which is principally due to the fact that the pressure exerted between the cylinders must be maintained between certain limits so that the paper web is not creased or spoiled by the impression of the texture of the felt on its surface. Futhermore, the admissible pressure which is required to make possible complete as possible utilization of the drying effect of the cylinders and to allow the machine to work at the highest possible speed is often so



We're Not "LETTING THE CAT OUT OF THE BAG" When We Tell You —What Dayton Beaters Did for Bemis



BEMIS BRO. BAG CO.
BURLAP-COTTON-PAPER BAGS
BURLAP IMPORTERS

March 19, 1929

The Samuel Frommer Co.,
410 Hulman Bldg.,
Indianapolis, Ind.

Gentlemen:

We have your letter of March 13th.

We have had the Dayton Beater & Hoist Company rebuild four of our beaters.

Last summer we entered into a contract with them to rebuild four of them first, and if that they rebuild one of their claims for same proved satisfactory and not the rebuilding it, they they were to proceed with the rebuilding of the other three. We were to be the sole judge of whether they were satisfactory, and in no way obligated ourselves to having the three other beaters rebuilt.

After the one beater had been rebuilt, we put it to a full month's test, and it proved out entirely to our satisfaction. We ordered the Dayton Beater & Hoist Company to proceed with the other three beaters.

These four rebuilt beaters are doing the work of eight of the original beaters, and we are saving 110 kilowatt hours per ton of stock beaten off.

We are very much pleased with the operation of these rebuilt beaters and the saving in power that they are showing.

Yours very truly,

BEMIS BRO. BAG CO.

E. B. Roberts

EBR:T

The letter produced at the left is a reproduction of one written by Bemis Bro. Bag Co. to the Samuel Frommer Co. regarding Dayton High Speed Beaters. It is an open-and-above-board statement. Here's the gist of it: "Four Dayton-rebuilt beaters are doing the work of eight beaters formerly used, and we are saving 110 K.W.H. per ton of stock beaten off." To be specific, with the eight holland beaters at 5% 1530 lb. furnish took 4 hrs; with four Daytons a 6½% 2860 lb. furnish takes 3 hrs. Power actually saved equals around $8000.00 per year at a 1c K.W.H. rate.

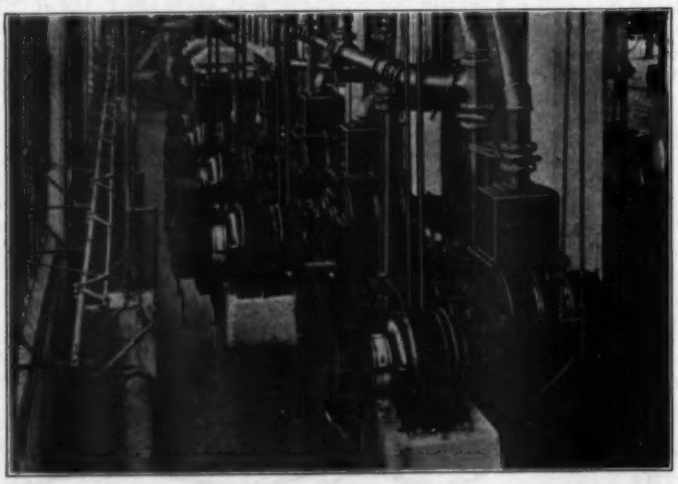
Can Dayton Beaters Do as Much for You? Very likely. No obligation to ask us about it. Let's talk it over

THE DAYTON BEATER & HOIST CO.
Dayton, Ohio

Eastern Representative:
E. K. Mansfield Co., 501 Fifth Ave., New York, N. Y.

Western Representative:
F. H. Godfrey, 415 Lenora St., Seattle, Wash.

DAYTON
High Speed Beaters



Positive Suction Produces Satisfactory Results at K.V.P.

The operators in paper mills, as in other industries want equipment which they can depend upon to produce positive results with the least operating and maintenance expense.

That is the kind of service The Kalamazoo Vegetable Parchment Company is obtaining through the use of Connersville Cycloidal Vacuum Pumps, which pull a positive suction on the rolls, flat boxes, driers, felt conditioners and filters.

Bulletin 20B describes the Connersville Pumps.

The Connersville Blower Company
Kentucky Ave. at 16th St.
Connersville Ind., U. S. A.

Branch Sales Offices
Chicago 80 W. Jackson Blvd. Pittsburgh. Chamber of Commerce Bldg. New York City. 114 Liberty St.

CONNERSVILLE
Blowers: Gas Pumps: Meters: Cycloidal Pumps

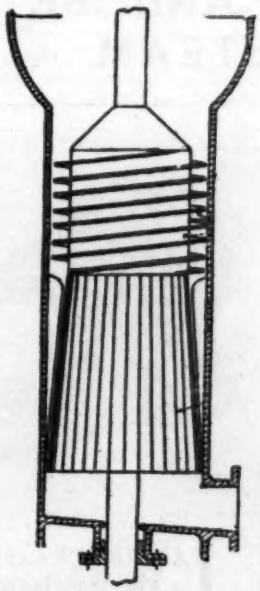
great that the felts, particularly the one inside, are worn out very quickly.

According to the present invention, papermaking machines are provided with an arrangement which permits in the first place greater production from the machine, because the paper web arrives dryer at the drying cylinders, and in the second place is economical as far as wear and tear on the felts is concerned. Thus, at least two pairs of press rolls are arranged between the couch roll and the drying cylinders.

According to the accompanying illustration, the drying cylinder is shown at (1), the paper web at (2), and the couch roll at (3). Between (1) and (3) are mounted two pairs of press rolls (4) (4) and (5) (5). They carry a common upper felt pressed against the cylinder (1) by means of the two rollers (6), while each lower cylinder or roll carries its own lower felt (8) or (9). It is advisable that the lower felt (9) of the roll (5) nearest to the couch roll (3), that is of the press roll through which the paper first passes, should be woven of such texture that it is relatively permeable. On the other hand, the lower felt (8) of the pair of press rolls (4) is woven in such a manner that any design which may have been impressed upon the moist paper web by the felt (9) can be removed by the pressure it exerts against the web. The press rolls (5) and (4) are also mounted in such a manner that their pressure against the paper web can be readily adjusted. Thus if a lower felt becomes badly worn, the pressure of the press roll against it can be reduced while the pressure of the roll against the other felt may be simultaneously increased.

Treating Linen Rags for Paper Stock

THE preliminary treatment to which linen rags and linen waste of various kinds, suitable for conversion into paper stock, is subjected is an important step in the pulping process. It is necessary that this process should be carefully and efficiently carried out before the chemical treatment. Hence, an apparatus of special turbine design has been perfected for working continuously to disintegrate and wash the linen materials. The product that is obtained from this apparatus is in such condition that it can be immediately charged into the cookers for conversion into pulp.



A diagram of the apparatus is shown in the accompanying illustration. The apparatus is composed of a casing, made preferably of steel or cast iron, topped by a funnel and mounted on a solid base. Within the casing is a rotary arrangement consisting of a vertical shaft which carries an upper cone, a cylindrical portion and a truncated conical portion at the bottom. There is an annular space between the cylindrical portion and the casing in which is located a solid spiral which is fixed in suitable manner to the rotor. The direction or the rotation of this spiral is such that the materials are caused to move to the bottom of the apparatus, that is towards the truncated conical portion. This part of the apparatus is provided with longitudinal ribs as can be seen from the illustration.

The rotating part is mounted on a shaft which rotates in a thrust bearing.

The material that is so to be treated may be fed directly to the machine in case its mechanical condition is proper or else they may first be cut up and dust particles removed. The material falls in the aforementioned annular space and is taken up by the spiral and moved to the bottom between the denticular truncated conical portion. There, these materials are subjected to disintegration, which serves to isolate the incrustating and pectinous ingredients. After the material has passed through this stage, it comes into the lower part or chamber and is removed through the outlet to a drum screen in which the fines are removed. J. Jaraczewski and E. Paquet, French Patent No. 653,022.

Straw Pulp Making by the De Vains Process

THE process is being carried out on large scale in a plant in Chile. There are three vertical digesters of 6000 kilograms capacity each. A caustic soda liquor of nine to eleven per cent concentration is used. Wheat and barley straw is used. The liquor is introduced at a temperature of 70 to 80

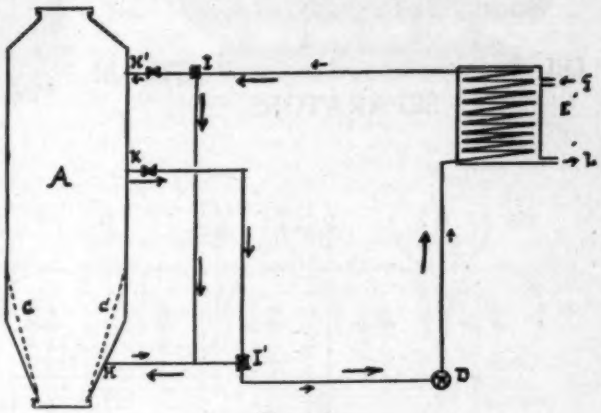


Figure 1

degrees C. The steam pressure is five atmospheres at the end of the digestion period.

The arrangement of the apparatus is shown in Fig. 1. The digester is shown at (A), while (E) is the liquor preheater

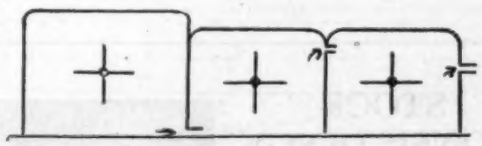


Figure 2

and (C) a perforated plate in the digester. The liquor is removed at the bottom by means of the pump (H), passed through the preheater coil, which is heated with steam, and then enters the digester again at the top at (H'). The direction of flow is indicated by the arrows. The circulation of liquor continues until the temperature reaches 100 degrees C., and then the direction of circulation is reversed by means of valves (I) and (I'), so that the liquor is sucked out at (K) and then after passing through the preheater is pumped into the digester at (H). Later in the digestion the direction of circulation of liquor is reversed every half hour. The steam pressure rises continuously, reaching two atmospheres in two hours, three and four atmospheres after an additional hour's digestion in each and finally attaining five atmospheres at the finish. The process takes six hours in all.

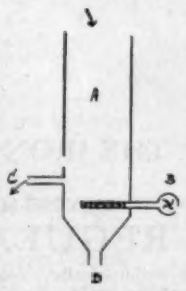


Figure 3

After digestion, the pulp is put through the usual operations. Bleaching is effected in an installation of three chambers which are connected with each other in the manner shown in Fig. 2. All three chambers are lined with chlorine-resistant material and are provided with stirring devices. The direction of the flow of the stock through the chambers is shown by the arrows.

An interesting apparatus is used for the manufacture of chlorine and sodium hydrate by the electrolysis of a salt solution. The solution of salt, containing 250 grams per liter,

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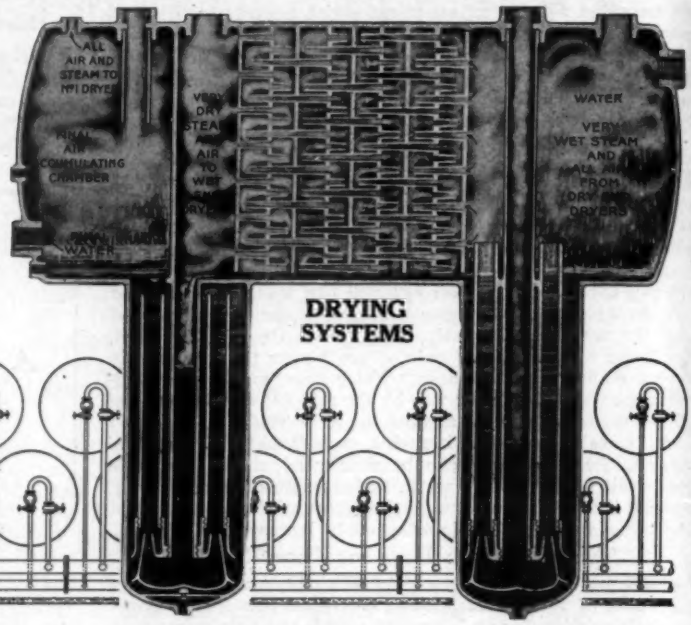

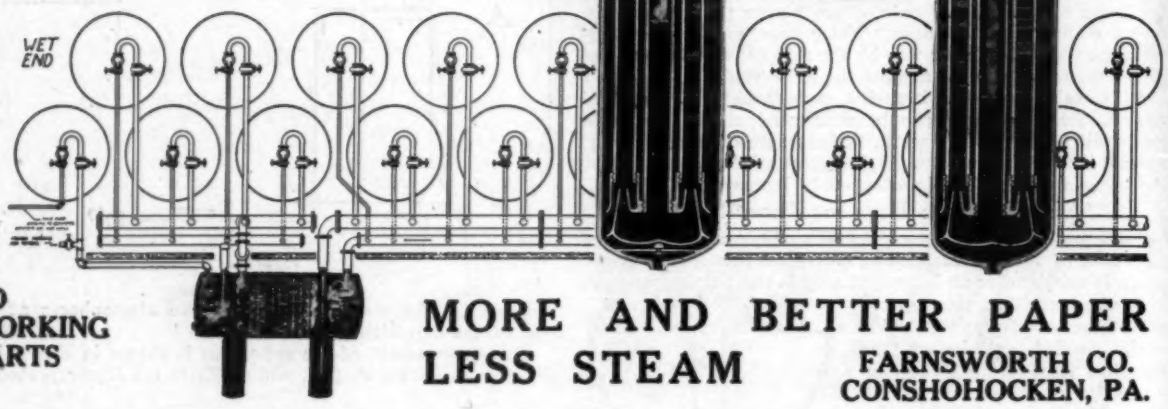

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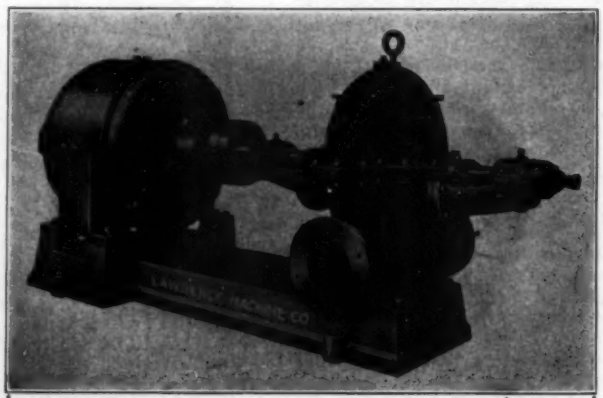

LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

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is pumped into the apparatus, shown in Fig. 3, at the top. The sulphates contained in it are precipitated by means of barium chloride and in order to accelerate the process, air is blown into the apparatus for twenty minutes by means of the compressor (B). The small excess of barium chloride is neutralized by means of sodium carbonate. Then sodium hydroxide is added to complete the precipitation. A little sodium carbonate and sodium hydroxide remain in the solution which must be neutralized. The settling of the precipitated salts takes approximately ten hours and these are removed at (D). The mixture of sodium chloride and sodium hydroxide is removed through (C) to a tank where hydrochloric acid is added to neutralize the alkali. The purified salt solution is then electrolyzed. Wochenblatt fuer Papierfabrikation, 1929, pages 264-7.

The Bleaching Coefficient and the Manner of Conducting the Ritter-Kellner Digestion

THE chemistry of the sulphite digestion process is discussed in brief. The author has carried out a long investigation in which he gathered certain statistical information regarding the progress of the digestion process and which he now attempts to use in the determination of the amount of sulphur dioxide required for the digestion of the pulp. He also draws conclusions on the degree of digestion of the pulp depending upon the amount of sulphur dioxide present and used. He establishes a law which can be expressed in the form of a formula and which makes possible the calculation of the bleachability of a stock.

The formula is as follows:— $B = (J - (a - \overline{b + c})K)h$. In this formula, (a) is the quantity of sulphur dioxide at 100 degrees C., (b) the quantity of sulphur dioxide in the waste liquor, (c) the quantity of sulphur dioxide which goes lost in the waste gases, (K) the coefficient of digestion (which shows how many parts of sulphur dioxide are required for dissolving a unit amount of incrustating matter), (J) the original incrustating material, (h) the incrustating coefficient of the chlorine and (B) the quantity of chlorine. The formula may also take this form:—

$$B = 50 - K(\overline{a - b} - (\frac{\overline{a + b} \times 10}{100} \cdot Z)).$$

In this formula, (B) is the chlorine consumption in per cent, (a) the total sulphur dioxide in per cent at a temperature of 100 degrees C, (b) the total sulphur dioxide in per cent in the waste liquor, (Z) the number of gas blow-offs above 100 degrees C. and (K) the digestion coefficient.

After it was determined that the variation in the practical use of this formula was plus or minus two per cent, it was decided not to determine the measured factors by titration. Hence two acid-resistant electrodes were built into the digestor and the difference in potential was read off on a milliammeter. The curve shown in the accompanying figure was obtained. The Y axis carries the milliammeter readings, while on the X axis are plotted time, the gas blow-offs, the total sulphur dioxide and the temperature. It is possible with this measuring equipment to measure a potential difference which allows evaluation of the pH of digestion. The errors that are incurred are practically constant. As the curve indicates, the potential difference rises spontaneously at the start, which proves that the acidity rises, the reasons for this being the increase of free sulphurous acid in the liquor due to the increase in the temperature. This increase, as may be seen from the further course of the curve, reaches a maximum due to the removal of sulphur dioxide by the addition of steam and blow-off. The latter has a very great effect in reducing the sulphur dioxide. The curve also shows the interesting fact that after point (4) the acidity rises again, which indicates that sulphurous acid is reversibly combined, for no blow-off occurs at this point. Herbert Nerad, Der Papierfabrikant, 1929, pages 277-282.

Determination of Alpha Cellulose

THE temperature of mercerization plays an important roll in the determination of alpha cellulose, and the temperature of the eight per cent wash liquor (caustic soda solution) has a much greater influence on the alpha cellulose coefficient, and hence temperature variations at this concentration of caustic soda are much more markedly manifested than at the concentration of the mercerizing liquor. The investigations of the author showed that temperature variations in the eight per cent liquor are much more manifested than in the case of the 17.5 per cent mercerizing liquor. Thus at a temperature of 5 degrees C. in the mercerizing liquor, the alpha cellulose coefficient was about 0.4 per cent, at 15 per cent about 0.1 per cent less and at 30 degrees C. it was increased by hardly more than 0.1 per cent. The variation in the case of the eight per cent liquor varied from +1.1 per cent to —7.5 per cent.

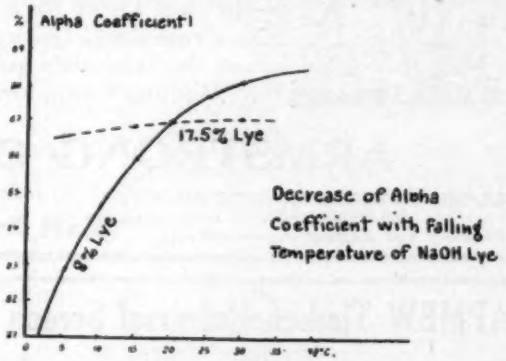


Figure 1

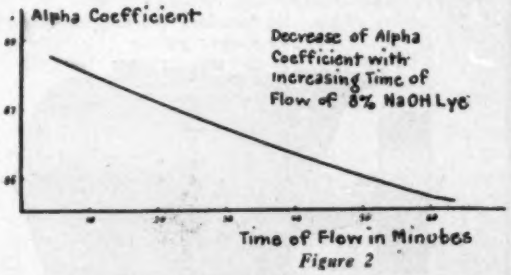
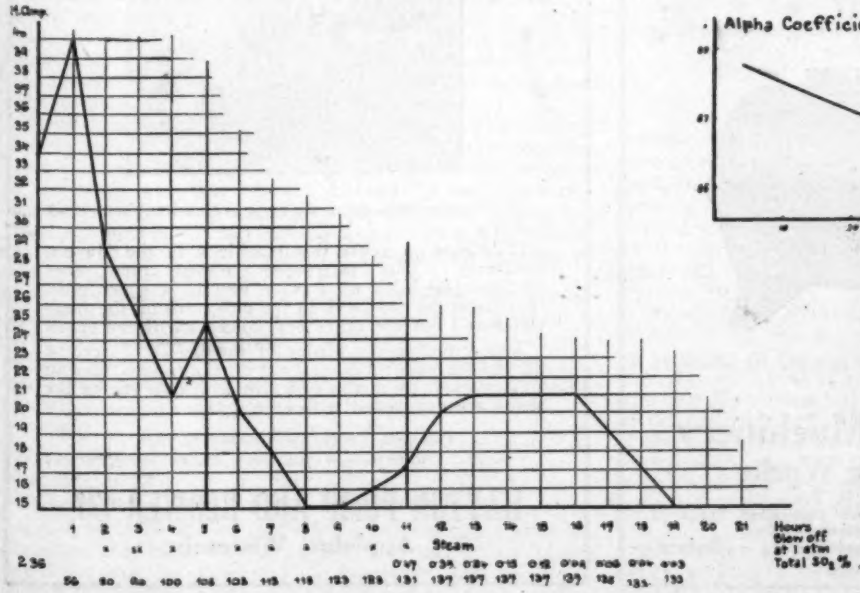


Figure 2



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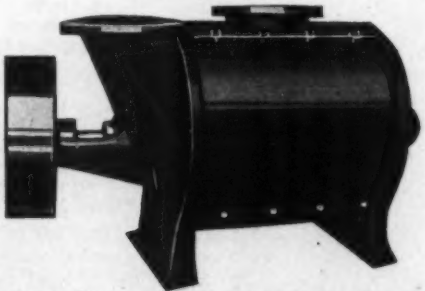

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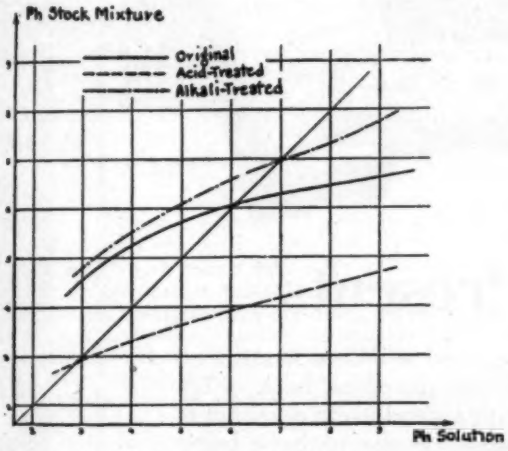
The way in which the coefficient varies with eight per cent and 17.5 per cent caustic soda liquors is shown graphically in Fig. 1.

Investigation is also made of the effect of time on the alpha cellulose coefficient, that is the time that the cellulose or pulp is in contact with the eight per cent concentrated liquor. Thus when the filter cake, after the 17.5 per cent caustic soda liquor is sucked off, is washed with 400 cubic centimeters of eight per cent caustic soda solution and the time of washing is varied by varying the vacuum, then results are obtained which are plotted in Fig. 2. It is easy to see that variation in the time of contact will cause variations in the alpha cellulose figure obtained. Dr. E. Schmidt, Der Papierfabrikant, 1929, pages 249-251.

Changes in Moist Sulphite Pulp on Storage

THE isoelectric point of sulphite pulp was determined and the shifting of this point during the storage of moist sulphite pulp was studied. The method was as follows: Liter samples of water were brought up to a certain pH value, between 2.9 and 8.9, by the addition of the proper amounts of hydrochloric acid or sodium hydroxide. Pulp in a four per cent mixture was mixed with these solutions. The pH value of the mixture was determined after ten minutes. If the values are plotted in a system of coordinates, the ab-



scissae being the pH of the original liquid and the ordinates the pH of the mixture of pulp and water in the same units a curve is obtained whose point of intersection with the line drawn from the origin of the system at an angle of 45 degrees with the horizontal represents with a certain degree of approximation the isoelectric point. Thus the isoelectric point was found to be pH equal to 6.1 in the case of unbleached sulphite pulp.

Investigation of the shifting of the isoelectric point during the storage of the moist sulphite pulp showed that it occurred always on the acid side. The position of the isoelectric point of the fresh pulp was between 6.3 and 7.4 and after two months storage in the moist state the point was located between 5.6 and 6.0. It was concluded that such a large variation must be due to a phenomenon of considerable importance and merited investigation.

An easy bleaching sulphite pulp, prepared in the normal manner, was used in the tests. It was tested in the unbleached moist condition, in the bleached moist condition and in the bleached machine-dried condition. The isoelectric point was determined once on the fresh material, then two months later on the stored pulp. The results obtained are shown below.

Material	Isoelectric point of the fresh pulp	Isoelectric point after two months storage.
Unbleached, moist	7.4	6.0
Bleached, moist	6.7	5.7
Bleached, dried	5.5	5.6

The dried pulp had an isoelectric point slightly shifted to the alkali side after storage. There does not appear to be any doubt that the shifting of the isoelectric point is closely connected with the change in the acidity of the pulp and the increased swelling capacity of the pulp in sodium hydroxide. It is seen that the isoelectric point of the moist bleached pulp approaches that of the dried bleached pulp after the two months storage. This indicates an equalization of the colloidal properties of the pulp, which is in agreement with practical experience in the working up of stored moist pulp. It is suggested that the isoeletric point may be used as a basis for characterizing pulps. E. Hochberger, Der Papierfabrikant, 1929, papes 282-4.

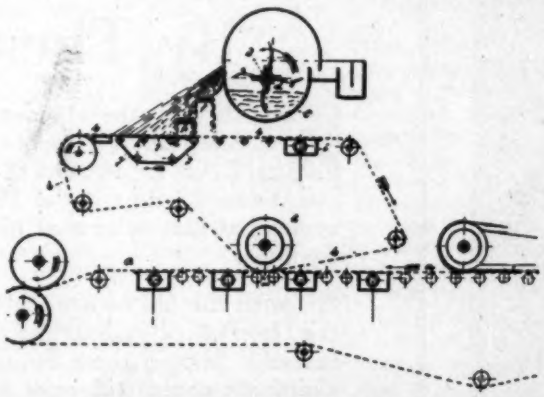
Parchment Paper

A THIN vegetable parchment paper of superior strength and free from pin holes and porous spots is obtained by blending rag pulp or wood pulp and pulp from graminaceous fibers such as esparto, straw or bamboo fibers freed from lignin and the like in proportions up to twenty-five per cent and seventy-five per cent respectively. The said mixture is made up into paper and this is then parchmentized in various ways, as for example, with the aid of sulphuric acid. The wood pulp is subjected to less beating than usual and the pulp of graminaceous fibers which may be esparto freed from lignin by chlorine treatment, is blended in and the paper made without further beating. W. Harrison and British Vegetable Parchment Mills Ltd. British Patent No. 307,108.

Making Fancy Design Paper

A NEW process for making fancy designed paper is patented by the I. G. Farben-industrie A. G., German Patent No. 473,902. The paper is treated with colored or uncolored substances, which are held in suspension, the latter being thrown on to the paper surface. The essential details of the apparatus, which is used for accomplishing this, are shown in the accompanying illustration.

The wire of the papermaking machine is shown at (a), which moves in the direction of the arrow. There is also a top wire (b) and above this is located the device (c) for depositing the substance that produces the design on the paper



surface, this device extending across the width of the top wire. A shaft (d) to which a number of scoop blades (e) are fixed, rotates within (c). An essential feature of the apparatus is the plates (f) which are located under the discharge opening of (c) and which serves to distribute the flow of material from (c). Another important detail is the rubber belt (g) which is carried over a number of rollers (h) like the top wire (b).

The apparatus works in the following manner. The scoop blades (e) dip into the mixture contained in (c) and scoop up a portion of the latter, discharging it on the plates (f), with the result that this mixture is distributed over the top wire (b). The rubber belt (g) prevents the fluid from running off the top wire (b), with the result that the colored mixture of fibers and water gets an additional opportunity of being evenly distributed over the top wire (b). The water is removed from this layer of material formed on the surface of the paper web as the latter pass over the suction box (i).

The Illinois Central Railroad Company has ordered five 600 hp. oil-electric locomotives from Ingersoll-Rand Company and General Electric Company.

"By These Presents"

WHEN Li, the Handsome One, sold a 245-foot strip of his property for burying-ground purposes, back in 65 B. C., he certified the sale with a good, solid document. For Yuan K'ang, of the Han dynasty, seems to have been somewhat particular that his subjects be business-like in their dealings.

So, with the aid of a metal mirror, Li inscribed the details of the Deed into clay, and had a pewter cast taken for a permanent record. Should there be any dispute, after 2,000 years, the claimants could still refer to the original "document" at the St. Louis Art Museum.

We don't pour pewter to make records these busy days. Instead, we entrust our agreements, our sales, and our fortunes to sheeted cellulose fibres—pieces of paper, easy to obtain, quick to work with, comfortable to handle, and of enduring quality to reach generations yet unborn.

HAMMERMILL PAPER COMPANY

Erie, Pennsylvania

New York, August 1, 1929

MIDSUMMER finds the paper industry in its customary condition for this time of the year, yet perhaps in a little more favorable position than ordinarily is noted during the "dog days," period, if reports from factors in the market and if indications are to be taken on their face value. It would appear as if business is developing in a little larger volume than usual at this season. Buyers apparently are not so hesitant about placing orders, and in quite a few instances are absorbing supplies a bit in excess of their immediate wants, while current demand is fully normal if not somewhat broader than the usual summer dimensions.

On the other hand, the market for paper is not over-brisk. Hardly so, for this could not be even so much as expected at this time of the year in other than abnormal times. The vacation spirit is in the air, general business is comparatively slow, and paper manufacturers and merchants are not inclined to press for sales, realizing that it would doubtless avail them nothing to do so at present, and the market obviously is affected by these circumstances. Consumers for the most part are operating as buyers as their needs arise, and, of course, their requirements now are about at the minimum of the year. Yet, reports say that a majority of paper mills are moderately well supplied with orders, and are managing to keep well engaged on probably a larger scale of production than ordinarily in summer.

Manufacturers and distributors alike are using their influence to uphold market prices, and to keep values on at least the levels that have been prevailing recently. There is considerable competition between dealers for the business that is available and this is serving to unsteady market rates in some instances, but in a general way prices are maintained and are characterized by a steady undertone. Manufacturers are taking the view that lower market rates would fail to stimulate demand under prevailing circumstances, and, since prices of paper are adjudged more than reasonably low in comparison with existing costs of production, every effort is being made to sustain market values.

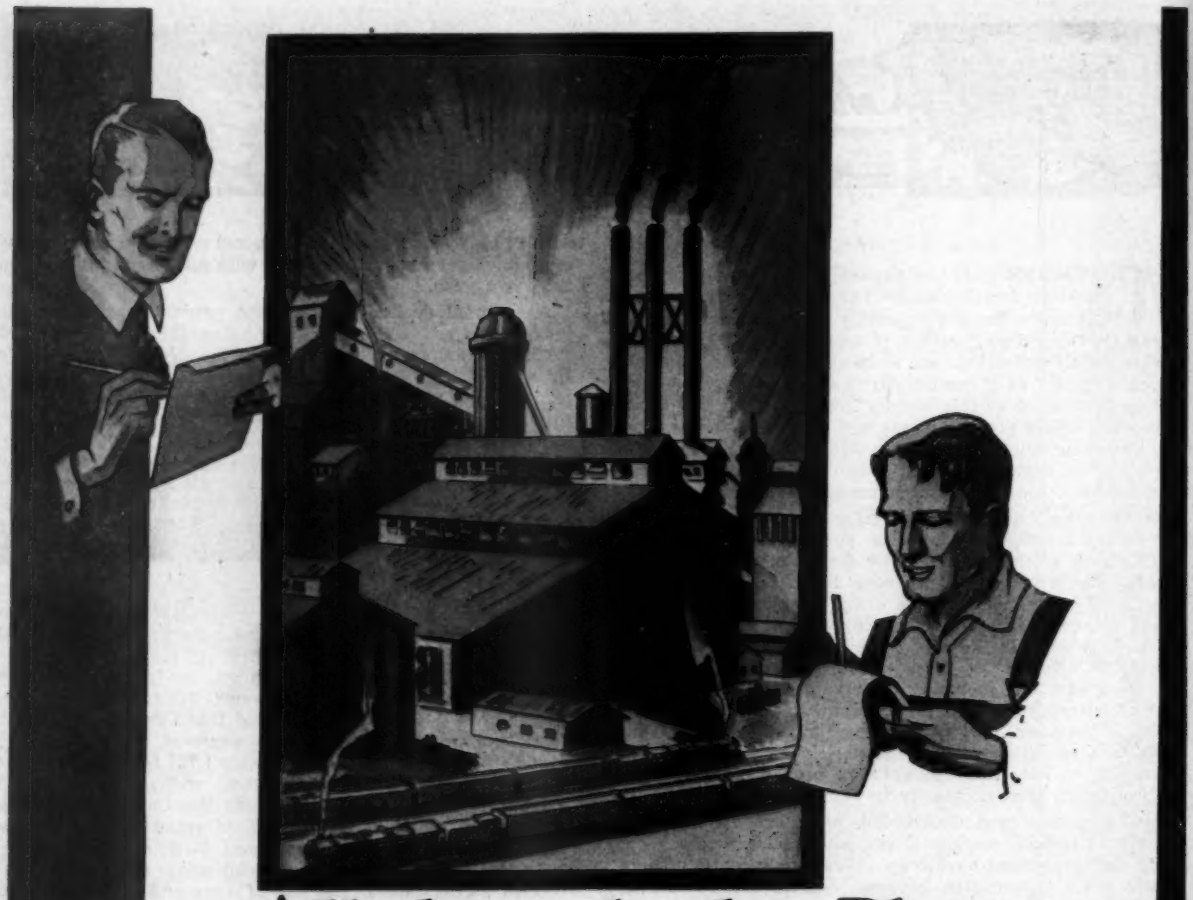
The outlook for the autumn is considered very favorable. Backing up their anticipations of excellent business in the latter months of the year, paper manufacturers in numerous instances are constructing new additions to their mills, installing more equipment, and in other ways preparing for an active market following the summer lull. The fact that consumers and converters have been buying principally in hand-to-mouth fashion, and from all signs are carrying very meagre stocks of paper, is foundation for the belief that when demand opens up in the fall it will be of broad proportions and very steady in its development. Moreover, the common feeling is that business generally will be good, in which event the demand for paper will be relatively active.

Production of paper in the United States reached a high level during May, totaling 605,209 net tons, as compared with 586,887 tons produced in the preceding month, and 573,441 tons in May last year, according to identical mill reports to the American Paper and Pulp Association. All grades excepting newsprint and wrapping registered increases in output in May over the same month in 1928, bag paper production being 21 per cent greater, felts and building 19 per cent, book paper 8 per cent, writing 9 per cent, paper board 8 per cent, hanging 4 per cent, and tissue 3 per cent. Shipments of paper and board from mills in May totaled 599,674 tons, which were within 6,000 tons of the production for the month, and comparing with 581,539 tons shipped in the preceding month. Stocks of paper and board at mills at the end of May aggregated 254,137 tons of all grades, contrasted with 248,842 tons a month earlier, and representing a decrease of about 2 per cent as compared with mill stocks at the same time last year.

A seasonal decline in newsprint production was recorded in June as compared with May, according to the monthly statistical summary compiled by the News Print Service Bureau. United States mills produced 113,407 tons of newsprint in June and shipped out 114,558 tons, against 123,504 tons produced and 123,840 tons shipped in the preceding month, while production in Canada was 225,055 tons and shipments 223,920 tons in June, contrasted with 245,644 tons produced and 247,449 tons shipped in May, making a combined total for the two countries of 338,462 tons produced and 338,478 tons shipped in June, against 369,148 tons and 372,289 tons, respectively, in May. During June, 20,802 tons of newsprint were made in Newfoundland and 1,336 tons in Mexico, so that the total North American output for the month amounted to 360,600 tons, compared with 392,497 tons in the preceding month. The Canadian mills produced 152,751 tons more newsprint in the first six months of 1929 than in the same time of 1928, which was an increase of 13 per cent. The United States output was 21,015 tons, or 3 per cent, less than in the first six months of 1928. Production in Newfoundland was 11,263 tons, or 10 per cent, more than in the first half of last year, and in Mexico 1,727 tons more, making a total net increase of 147,726 tons, or 7 per cent, over the same period in 1928. During June the Canadian newsprint mills operated at 86.7 per cent of rated capacity, United State mills at 80.8 per cent, and Newfoundland mills at 105.6 per cent. Stocks of newsprint paper at Canadian mills totaled 24,199 tons at the end of June and at United States mills 24,602 tons, making a combined total of 48,801 tons, which was equivalent to 3.1 days' average production.

May production of paperboard in the United States attained a new high level for this year and was larger than in any month during 1928, according to the monthly statistical summary of the board industry compiled by the U. S. Department of Commerce. Mills of the country produced a total of 270,754 tons of board in May, against 251,147 tons in the preceding month, and 242,394 tons in May last year. The May output brought the total for the first five months of this year up to 1,254,343 tons, compared with 1,106,561 tons in the similar period a year ago. New orders received by mills during May called for a total of 242,596 tons of board, against 250,366 tons in the preceding month, and unfilled orders at the end of May were for 89,390 tons, contrasted with 98,162 tons a month earlier. Shipments of board from mills in May aggregated 262,604 tons, compared with 247,773 tons in April, and stocks at mills at the end of May totaled 62,292 tons, against 57,881 tons a month before.

One of the bright spots in the market at present is in high grade fine papers. Demand for the better qualities of bonds and ledgers is quite pronounced, and mills making such grades are reported supplied with orders which should keep them well engaged for some time. Wrapping paper demand is fair; while it is reasonably smaller than at other periods of the year, it is developing consistently, and quoted prices are steady. Book paper is moving well, particularly into contract channels, and at maintained market rates. Tissue is moderately active. Consumption of newsprint is at the moment probably at the low point for the year, but the market is possessed of a steady tone and prices are stable. Box boards are favored with a fair demand which gives promise of broadening very shortly as paper box manufacturers begin to prepare for their busy pre-autumn season.



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Papermaking Rags

Everything considered, there appears to be a fairly good movement of rag stock to paper mills. It is evident that, owing to the season and because of the uncertainty existing in their own markets, paper manufacturers are buying rags, along with just about every other kind of raw material, in a cautious manner at present, mostly confining their orders to supplies directly and actually needed, yet it is reported that demand is of steady character and is of broad enough compass to have sustaining influence on market values. Another factor helping to support prices is that available stocks of rags are comparatively small, judging from all indications and according to nearly all reports. Incoming supplies from collection sources are not measuring up to normal, so it is stated, and importations have dropped off, due principally to a disparity in market rates prevailing here and abroad. Paper mills in Europe are said to be consuming rags on a fairly large scale, which is diminishing supplies available in the various European countries for export to the United States, particularly at the prices which American importers say they are enabled to offer and hope to realize a profit in sales to paper mills in this country at the figures the latter are willing to grant.

Despite this being the summer period, when frequently at this time recession in market levels of rags is recorded, prices are holding their own quite steadily. Such slight changes as have been noted recently have been mostly in a downward direction, but as a matter of fact, market values have shown very little alteration. Dealers and importers are not pressing sales, which would seem to bear out that they haven't large stocks on hand, and are bent on receiving the prices asked in almost every instance. In certain cases, there is decided firmness in prices of specific grades, which is reported due to the scarcity of such descriptions. This is said to be especially true as regards some kinds of new cuttings, and also of certain grades usually imported.

New No. 1 white shirt cuttings are quoted by dealers in New York City at 11 cents per pound f. o. b. that city in most instances although it is said that purchases by mills are being effected at slightly less. On the other hand, dealers elsewhere are reported in frequent cases to be asking 11.50 cents for these rags. New fancy shirt cuttings are firm at 6.50 cents or higher per pound f. o. b. New York, as are blue overall cuttings at 7.75 to 8 cents a pound, unbleached muslins at 10.75 cents, No. 1 washables at 5.50 to 5.75 cents, light silesias at 8 to 8.25 cents, and O. D. khaki cuttings at 6 to 6.25 cents. Cottonade cuttings are reported available at 3 to 3.25 cents a pound New York, whereas canton flannel cuttings are relatively firm at 9.50 cents or higher for bleached and 8.50 to 8.75 cents for unbleached.

Domestic roofing rags are moving into mill channels in a fairly consistent way and at maintained prices. In the East, sales of No. 1 domestic roofing or cloth strippings are reported at 1.85 cents a pound f. o. b. New York, and of No. 2 roofing at 1.50 cents, while slightly higher prices are being paid in the Middle West. On the other hand, roofing felt manufacturers are rather neglecting foreign rags, and are offering relatively low prices, seldom bidding more than 1.55 cents a pound ex dock New York for dark colored cottons. Old white cottons are steady quotable, with 5.50 to 6 cents a pound asked for No. 1 repacked whites f. o. b. New York and with above these figures demanded for country packing of superior quality, while No. 2 repacked whites are bringing 2.75 to 3 cents a pound at shipping points. Repacked thirds and blues are selling at 2.50 to 2.75 cents at dealers' points, and it is stated that extra desirable packing has brought up to 3 cents from particular mills.

A better all around demand for foreign linens is reported, and prices of these rags display a stiffening trend.

Average quotations f. o. b. shipping and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	10.50–11.00
White shirt cuttings, No. 2	7.00– 7.50
Fancy shirt cuttings	6.50– 6.75
Washables, No. 1	5.50– 5.75
Unbleached muslins	10.75–11.00
White lawns	9.50–10.00
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Light flannelettes	8.25– 8.50
Canton flannels, bleached	9.50– 9.75
Canton flannels, unbleached	8.50– 8.75
Shoe cuttings, bleached	7.75– 8.00
Shoe cuttings, unbleached	7.00– 7.25
Light silesias	8.00– 8.25
O. D. khaki cuttings	6.00– 6.25
Mixed khaki cuttings	5.25– 5.50
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1, white foreign	14.00–15.00
Light prints, foreign	4.00– 4.50
Old Stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.85– 2.00
Lace curtains	5.00– 5.25
Thirds and blues, rough	1.85– 2.00
Thirds and blues, repacked	2.50– 2.75
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	4.00– 4.25
Roofing, No. 1 (cloth strippings)	1.80– 1.90
Roofing, No. 2	1.45– 1.50
Linsey garments, foreign	1.80– 1.85
Dark colored cottons, foreign	1.55– 1.60
Blue linens, foreign	4.00– 4.25
Gray linens, foreign	4.25– 4.75
White linens, foreign	8.00– 8.50
Light prints, extra, foreign	2.50– 2.75

Rope and Bagging

Market prices of old rope have eased just a trifle from the top levels recently established, with dealers attributing the downtrend to the summer season and the lessened eagerness of paper manufacturers to buy. Where consumers were paying up to 5.25 cents a pound f. o. b. New York for No. 1 domestic old manila rope, it is reported that 5 to 5.12½ cents is about all that is now offered, while prices of imported old manila rope are down from 5 cents to about 4.75 cents a pound ex dock American Atlantic ports. Dealers continue to stress the limited supplies of old rope that are available, and express the opinion that values will not only stage a comeback but probably will rise to new high levels in the autumn when the needs of paper mills increase. Mixed strings are selling at 90 cents per hundred pounds for some packings and up to 1.10 cents a pound f. o. b. dealers' shipping points, and are in fair demand.

Nothing more than a routine demand exists for old bagging, and paper mills evidently are filling their wants without having to alter prices. No. 1 scrap bagging is selling at 1.60 cents a pound f. o. b. shipping points, and roofing bag-

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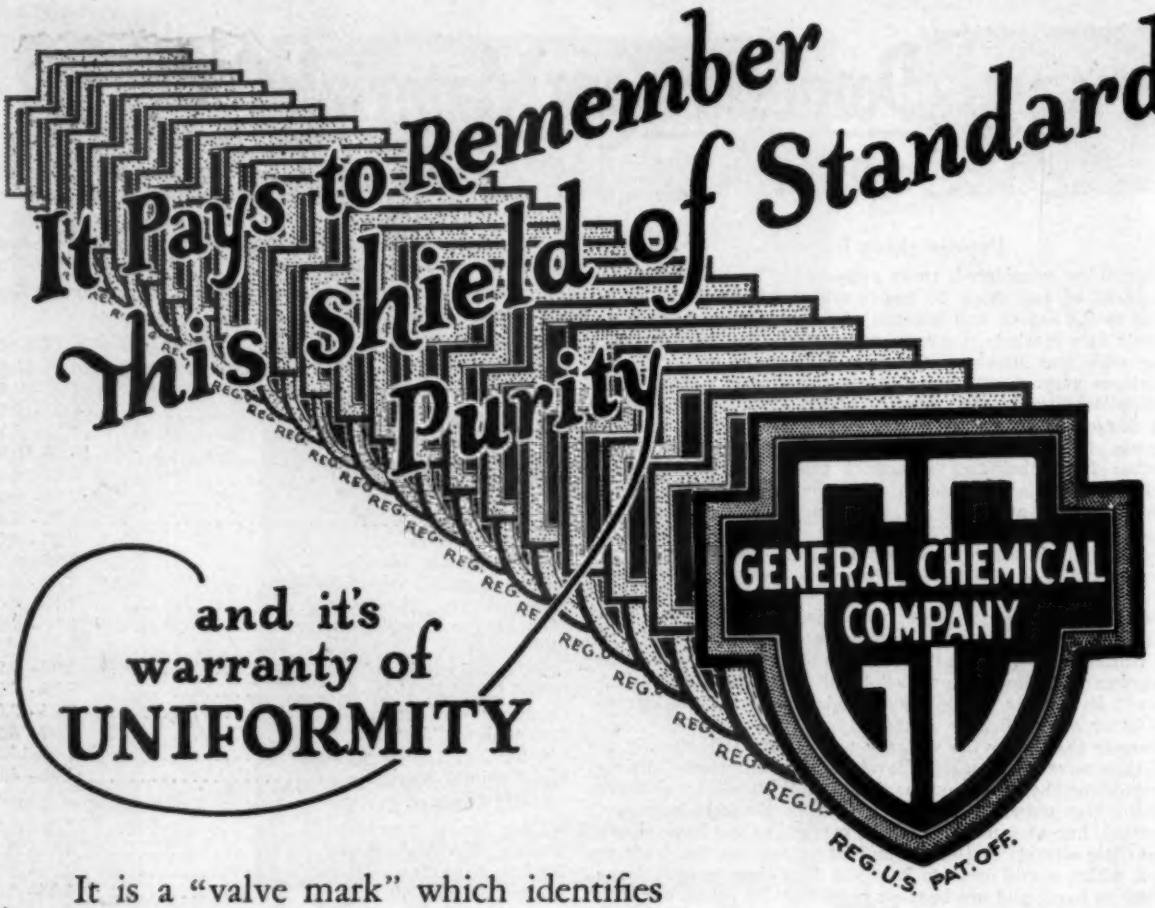

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PHILADELPHIA
SAN FRANCISCO

265

ging at 1. 25 cents. Gunny bagging is quiet, and tending lower in value.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.55–1.65
Gunny, No. 1 foreign	1.50–1.60
Scrap bagging, No. 1	1.60–1,65
Roofing bagging	1.25–1.30
Wool tares, heavy	1.65–1.75
Wool tares, light	1.55–1.65
Manila rope, No. 1 foreign	4.75–5.00
Manila rope, No. 1 domestic	5.00–5.25
Sisal strings	1.75–2.00
Mixed strings	.90–1.10

Old Paper

A rather typical midsummer market prevails for old paper, with consuming buyers operating principally in limited-sized tonnage and with prices in favor of those on the purchasing side of the market. It is as yet a bit too early for board mills to commence buying in a larger way against autumn needs, and with demand perhaps falling a little short of the available supply in most producing centers, values are none too steady, particularly on some grades which are unmistakably on the downslide.

Low grades appear to be in relatively better call than the higher qualities, and No. 1 mixed paper is reported selling at 45 cents per hundred pounds and folded news at 50 cents in the East, f. o. b. New York, with above these prices ruling in the Middle West. Container manilas are said to be moving well and at a price basis of 55 to 60 cents per hundred pounds f. o. b. New York, while No. 1-print manilas are quoted at 70 to 90 cents, depending on the packing. Books and magazines are in slow call and are available to mills at 1.30 to 1.35 cents a pound New York, and the ledger stock is in very poor demand with transactions reported down to 1.20 cents a pound f. o. b. New York. Soft white shavings are moderately active on a price range of 2.40 to 2.90 cents a pound, according to quality, whereas hard white shavings are tending off and are quoted at 2.60 to 3 cents a pound f. o. b. New York for No. 1 packing.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.60–3.00
Hard white shavings, No. 2	2.40–2.60
Soft white shavings	2.40–2.90
Colored shavings	1.00–1.25
Heavy book, No. 1	1.30–1.40
Crumpled book, No. 1	1.00–1.10
Ledger stock	1.15–1.30
Kraft, No. 1	1.80–2.00
New kraft cuttings	2.40–2.60
Manilas, No. 1	.70– .90
Folded news	.50– .65
Sulphite mill wrappings	.75– .85
Old corrugated boxes	.65– .70
New corrugated box cuttings	.75– .85
Mixed paper, No. 1	.45– .55
Common paper	.35– .45

Pulpwood

This being the time of the year when activity in the pulpwood market is at a minimum, there is little or no life in the trade, according to reports. Prices are more or less nominal, with both sellers and buyers pursuing a waiting policy.

Exports of pulpwood from Canada during the first six months of this year, all of which were to the United States, totaled 612,946 cords, valued at $5,942,623, showing a considerable decline from the 744,974 cords of a value of $6,926,030 exported in the similar time of 1928.

Mechanical Pulp

The drought in most important pulp grinding regions has been creative of a much firmer tone in the mechanical pulp market. Not only have prices stiffened to a very perceptible degree, but producers are offering in a somewhat sparse manner and it would appear as if market values are due to

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SATIN WHITE
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PENSACOLA, FLA.
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Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY
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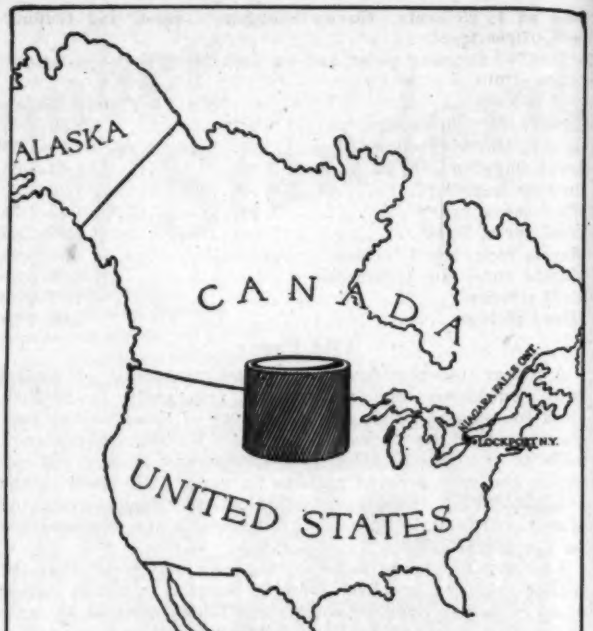

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5. Dewatering
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Montreal, Quebec

score an appreciable rise. It is nothing unusual for ground wood prices to strengthen late in the summer, but this year the upward trend has developed earlier than ordinarily, owing to the droughts having put a different complexion on the manufacturing situation, it being said that in numerous cases grinders are unable at present to operate their plants at anything approaching normal capacity because of low water in mill streams.

Domestic ground wood is virtually out of the market other than for regular buyers, and is nominal in price at about $28 a ton f. o. b. pulp mills, while grinders in Canada are quoting $25 or higher a ton at producing points for prime ground wood. Imported ground wood is quoted at $36 per short ton for dry and $34 for wet ex dock American Atlantic ports.

Mills in the United States produced 108,144 net tons of ground wood in May, compared with 105,327 tons in the preceding month, according to identical mill reports to the American Paper and Pulp Association. Stocks on hand at producing plants at the end of May amounted to 116,326 tons, against 104,516 tons a month earlier.

Chemical Pulp

Not a great deal of fresh buying of chemical wood pulp is reported but the market continues to be characterized by fair activity and by a steady undertone. Consumers are absorbing supplies freely on contracts and back orders, and producers are not exerting much pressure on buyers, presumably figuring that to do so would avail them nothing at this time of the year. Prices are maintained fully, and, if anything, the tendency seems upward—in certain grades, at any rate. Unbleached sulphite is reported steady at 2.75 to 3 cents per pound f. o. b. pulp mills for book qualities, and 2.50 to 2.75 cents for news grade, while the most popular grades of bleached sulphite are quoted at 3.75 to 4 cents a pound at producing mills. Domestic No. 1 kraft pulp is around a price level of 2.90 cents a pound f. o. b. pulp mills, and bleached soda pulp is selling at 3.35 to 3.60 cents delivered paper mills.

Production of chemical pulp in the United States during May amounted to 137,015 net tons, compared with 132,422 tons in April, according to the American Paper and Pulp Association, while mill stocks at the end of May were 19,304 tons, against 20,586 tons a month earlier.

Quotations f. o. b. pulp mills are as follows:

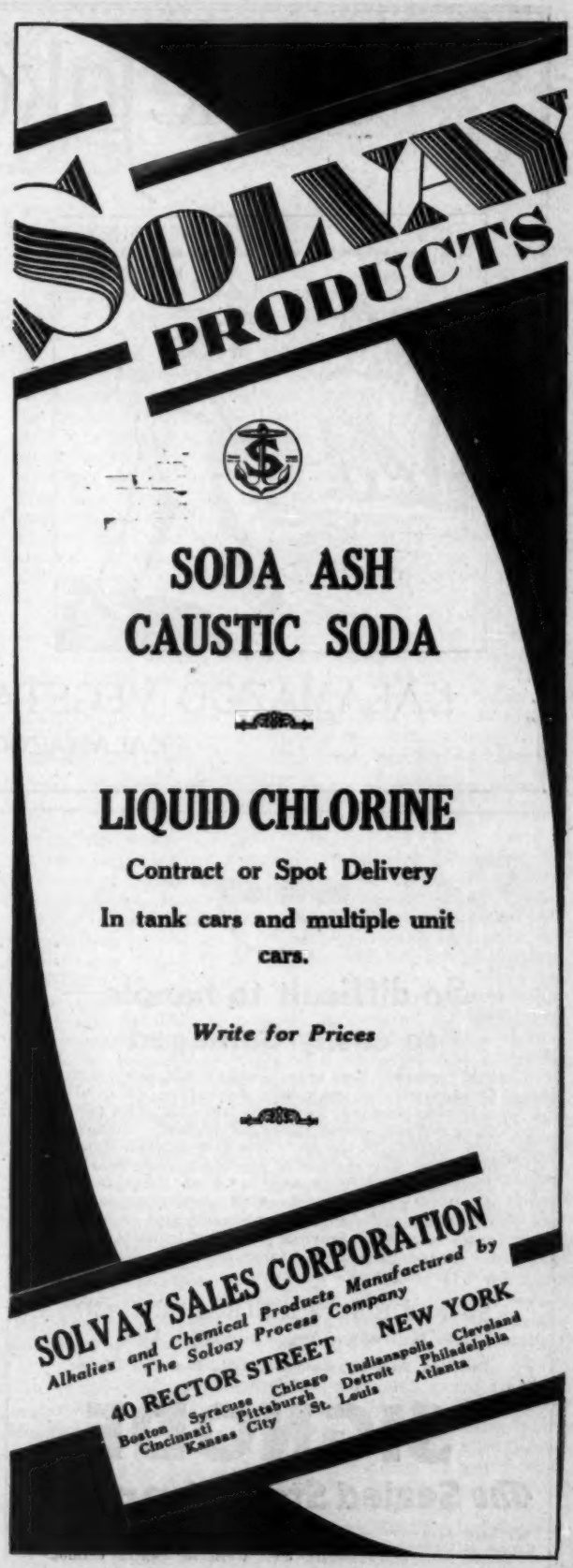
Bleached sulphite	3.75–4.75
Easy bleaching sulphite	2.75–3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.35–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.75–3.00
Screenings, refined	1.50–1.75

Chemicals

A slightly lower price level is reported for casein, with purchases by paper manufacturers noted down to 14.50 cents a pound for the domestic product and with imported casein available at 15 to 15.50 cents, duty paid. Bleaching powder is steady quotably at 2 to 2.35 cents a pound in large drums at works, but the market is quiet. Caustic soda is in less demand but quotations are maintained at 2.90 to 3 cents a pound at works for spot delivery, and soda as is steady on a price basis of 1.32½ cents per pound for the 50 per cent light product packed in bags.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powder	3.50 – 3.75
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	14.50 –15.50
Caustic soda, spot delivery	2.90 – 3.00
China clay, domestic washed	8.00 –12.00
China clay, foreign	15.00 –20.00
Rosin, Grade E	8.70 – 8.75
Satin white	2.00 – 2.25
Soda ash, 50 per cent light (bags)	1.32½– ....
Starch, papermakers', in bags	3.82 – ....
Talc (ton)	16.00 –18.00



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KALAMAZOO, MICHIGAN

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We repeat—it is easy to ship paper safely and economically—if you take advantage of available refinements. You may feel that it is anything but easy—with materials so easily damaged—so difficult to handle. The fact remains, however, that thru the use of the Signode System of Tensional Steel Strapping we have shown hundreds of paper mills how to ship more safely and practically eliminate damage and in most cases have also shown a reduction in costs. Ask for demonstration or catalog No. 15T. There is not the slightest obligation.

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New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	10–30
Colored sulphite	10–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–12.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Covered stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	5.75–6.25
No. 2 kraft	4.75–5.25
Southern kraft	4.75–5.25
Boards—	**New York and Chicago**
Solid news	40.00.45.00
Straw	50.00–55.00
Plain chip	35.00–37.50
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binder's board	65.00–70.00

Important Paper Decisions by Customs Court

The decisions of the United States Court of Customs and Patent Appeals in the standard newsprint and side run cases, known as the Heffernan and Crown-Willamette cases respectively have resulted in several decisions involving cases long pending before the lower courts. The decisions rendered are in accordance with the ruling in these two test cases. One case so decided was the first case initiated after the formation of the Import Committee, and involved the importation of a dutiable paper as standard newsprint. The court has ruled this paper to be dutiable, after the case has been pending in court for nearly five years.

Another important case is that involving importations in the middle west from a Canadian mill, paper sold under a brand name, but claimed by the importer to be dutiable as standard newsprint. Paper claimed to be standard newsprint by New Orleans importer held to be dutiable as wrapping paper under the side-run news decision.

New Cases Under Consideration—Among new cases in which importers are endeavoring to bring in paper at rates of duty lower than those fixed by the appraisers are: Greaseproof paper claimed to be free of duty as parchment; paperboard cut into shapes, claimed to be dutiable as plain board at 10 per cent, instead of 30 per cent as held by appraiser; seven importations of fancy paper held by appraiser to be dutiable at higher rate than claimed by importer; punching paper claimed to be dutiable at writing paper rate held by appraiser to be dutiable as paper not specially provided for at a higher rate of duty; seven importations of envelopes claimed to be free of duty as containers of lithographic material, held by appraiser to be dutiable as envelopes; eight shipments of machine glazed sulphite held by New York appraiser to be dutiable as greaseproof paper claimed by importer to be dutiable as wrapping; seven shipments of vegetable parchment sausage casings claimed to be free of duty.

The United States Customs Court has in rather sharp language refused to grant a remission of additional duties levied against several shipments of fancy decorated envelope lining which was found to have been undervalued. These additional duties are imposed for undervaluation when the importer can not show to the satisfaction of the court that there was no intention to deceive the customs authorities. The shipments are among the large number of cases in which the Import Committee of the American Paper Industry has been interested in behalf of the domestic producers. In ruling on the importations, the justice rendering the decision said:

"The testimony of the witness seemed impossible to reconcile, the court saying 'If there is a combine which controlled all the export prices for this type of paper in Germany it seems strange that each of the four samples forwarded was quoted at a different price, and that even the highest was found to be 28 per cent below the dutiable value!'"

The United States Court of Customs and Patent Appeals has finally decided the case which involved the dutiability of cellophane. Importers tried to secure admission of this product as greaseproof paper at 3 cents per pound and 15 per cent, but the customs officials held it to be dutiable at 25 per cent, a higher rate, as similar to gelatine in sheets. The domestic manufacturers took this ruling to court and secured a decision from the United States Customs Court that it was dutiable at 60 per cent as a compound of cellulose. The higher court, however, has ruled that being in sheets, and not manufactured, the proper rate is 40 per cent, giving the domestic producers better protection than previously accorded, but not as high a rate as claimed. The Import Committee did not participate in the trial of this case, but watched the developments closely because of the relationship of cellophane to the higher grades of glassine paper. The lower duty claimed by the importer would make foreign cellophane a dangerous competitor for domestic glassine.

A. E. Woollam has recently been appointed as sales representative of the Michigan territory for the Hill Clutch Machine & Foundry Co. of Cleveland, O. Mr. Woollam is an expert paper mill man and has long been identified with the industry, giving him a close understanding of paper mill power transmitting requirements. Mr. Woollam is introducing the new Hill Tubular Agitator to the Michigan territory. His headquarters will be 304 Hanselman building, Kalamazoo, Mich.

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CANADIAN KRAFT LIMITED, Three Rivers, Canada
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EASTERN AGENTS of Sulphite Pulp
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KRAFT HURUM NORWAY SPECIAL — "HURUM SPECIAL" Extra Strong Kraft

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Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
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IMPROVED BADGER BLACK LIQUOR EVAPORATORS

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NO ENTRAINMENT

SODA and
SULPHATE
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E. B. BADGER & SONS CO., Boston, U. S. A.

EXPORTS

Exports of paper from the United States showed a decline in value during May as compared with the preceding month, but scored an appreciable increase over the shipments in the corresponding month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. Exports of paper of all kinds in May aggregated in value $2,831,715, against $2,958,053 in April of this year, and $2,500,298 in May, 1928. Exports during the first five months of this year reached a total value of $15,961,991, recording a large gain over the shipments valued at $12,449,019 in the similar period a year ago.

Exports of newsprint paper in May amounted to 2,394,816 pounds, of a declared value of $84,986, contrasted with 1,796,659 pounds of a value of $65,622 in the preceding month, and 1,760,811 pounds of a value of $70,571 in May last year. Book paper, not coated, was exported in May to the amount of 3,254,371 pounds, valued at $210,607, compared with 3,331,605 pounds of a value of $232,167 in April last, and 2,541,991 pounds of a value of $166,151 in May last year. Exports of wrapping paper climbed from 2,812,261 pounds of a value of $178,272 in May, 1928, to 3,921,029 pounds of a value of $244,647 in the same month this year, and export shipments of building and sheathing paper increased from 1,015,896 pounds of a value of $38,149 in May, 1928, to 2,332,028 pounds of a value of $67,232 in the similar month of 1929. On the other hand, writing paper exports declined to 2,178,379 pounds, valued at $221,857, in May last, against 2,267,537 pounds of a value of $243,478 in May last year, and tissue paper exports receded from a value of $100,107 in May, 1928, to $72,523 this year.

Exports of box board were valued at $109,664 in May, contrasted with $115,804 in the same month a year ago, while shipments of other paper board and straw board were valued at $163,796 in May, against $168,579 in May, 1928. Exports of paper boxes from the United States increased in value from $148,778 in May last year to $157,777 in the similar month this year.

IMPORTS

Wood Pulp

Despite this being the midsummer period when paper manufacturers usually are not in much of a mood to purchase raw material other than to satisfy actual and direct requirements, the market for imported wood pulp is exhibiting considerable life and reports say that purchasing of chemical pulps for forward shipment from abroad is on a fairly broad scale. It is evident that the chief activity in the market involves buying for next year, but consumers are looking ahead and are contracting for 1930 supplies in substantially large volume. Moreover, with offerings of pulp from primary sources as sparse as they happen to be, more especially for delivery over the balance of this year, inquiry from consuming quarters naturally is magnified to some extent, which also helps to give the market a fairly brisk complexion.

From all accounts, very little chemical pulp remains available in Scandinavia for shipment during the rest of 1929. Mills in Sweden are about sold out on strong sulphite, are said to have little bleached sulphite, and not much more kraft pulp. Moreover, buying for next year, not only by United States consumers but also by British and Continental paper manufacturers, has been on a scale where the great bulk of the first half of the 1930 output of Scandinavia has been disposed of, and producers now are exercising more care in making offerings and entering selling commitments. Prices are firm to strong, and sales for next year are being made at but slightly under current shipment prices or not more than about a dollar per ton less.

Foreign strong unbleached sulphite is quoted by New York importers and agents at 2.80 cents a pound in most instances, ex dock American Atlantic ports, with above this price asked for some mill brands which are well known to consumers in this country. It is stated, in fact, that it is doubtful whether purchases of prime strong sulphite can longer be effected under 2.80 cents on the dock. Prime easy bleaching sulphite is firm on a quotable range of 2.85 to 3.10 cents per pound ex dock New York, and the more popular grades of prime bleached sulphite are quoted from 3.70 to 4 cents a pound. Swedish kraft pulp of prime standard quality is steady at 2.45 to 2.50 cents a pound, and it is reported that only in rare cases now are importers or agents accepting less than this price level for recognized brands of kraft. Imported groundwood has stiffened slightly in price to where importers are asking $36 per short ton ex dock New York for dry and $34 for wet pulp.

Imports of wood pulp into the United States continued on a high level during May, a total of 108,919 long tons of chemical of all grades being imported in that month, of a declared value of $6,353,782, as compared with 110,497 tons of a value of $6,442,298 imported in the preceding month, and 81,165 tons of a value of $4,743,144 in the corresponding month last year. The May imports brought the total for the first five months of this year up to 535,979 long tons, giving a monthly average of 107,195 tons, and showing a large gain over the total of 486,038 tons or a monthly average of 97,207 tons imported in the similar period of 1928. In other words, importations in the first five months of the current year were almost 50,000 tons in excess of the receipts in the same time a year ago. Groundwood imports in May were 18,789 long tons, valued at $438,500, against 20,816 tons of a value of $521,883 in the preceding month, and making a total for the first five months of 1929 of 90,087 tons, contrasted with 93,079 tons in the similar period last year.

Current market quotations ex dock New York, and receipts at the port of New York during July, 1929, follow:

Bleached sulphite, No. 1	3.70– 4.25
Unbleached sulphite, strong No. 1	2.75– 2.90
Unbleached sulphite, No. 2	2.60– 2.75
Easy bleaching sulphite	2.85– 3.10
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.75– 3.00
Kraft, standard Swedish	2.45– 2.50
Groundwood, per ton (dry)	35.00–36.00

Castle & Overton, 2,711 bls. from Hamburg and 319 Rotterdam; J. Andersen & Co., 1,201 bls. from Sarpsborg, 3,160 Oslo, 9,150 Hernosand and 1,000 Stugsund; Acer & McLernon, 6,726 bls. from Chandler, Que.; Bulkley, Dunton & Co., 450 bls. from Gothenburg, 6,050 Soderhamn, 4,550 Hernosand, 11,925 Stugsund, 1,950 Iggesund and 1,625 Gefle; E. M. Sergeant Co., 375 bls. from Gothenburg and 150 Oslo; Price & Pierce, Ltd., 2,500 bls. from Gothenburg and 750 Soderhamn; E. J. Keller Co., 687 bls. from Hamburg; M. Gottesman & Co., 1,020 bls. from Rotterdam, 4,000 Sebenico and 2,000 Iggesund; Atterbury Bros., 1,500 bls. from Oslo; Pagel, Horton & Co., 600 bls. from Husum, 1,500 Pitea and 7,500 Gefle; Perkins-Goodwin Co., 350 bls. from Obbola; A. P. W. Paper Co., 23,042 bls. ground wood from Sheet Harbor; Bank of New York & Trust Co., 300 bls. from Oslo; O. E. Kiaer, 300 bls. from Stockholm; Chatham & Phenix National Bank, 600 bls. from Pitea; Johaneson, Wales & Sparre, 299 bls. from Gothenburg and 425 Sundsvall; Bank of Nova Scotia, 262 bls. from Windsor, N. S.; Scandinavian Pulp Agency, 3,200 bls. from Skutskar; Stora Kopparberg Corp., 1,030 bls. from Skutskar; Chemical Bank & Trust Co., 253 bls.

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Conveyor or Gravity Feed Shredder

Give Beaters a Lift

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

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We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1929 Paper and Pulp Mill Catalogue

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PRICE & PIERCE, LTD.
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Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
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For EVERY GRADE of PULP & PAPER

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Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
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CAMDEN, MAINE

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and direct

from Hamburg; Borregaard Co., 300 bls. from Sarpsborg; Order, 350 bls. from Stockholm, 1,300 Oslo, 1,363 Hamburg, 475 Raumo, 155 Bremen, 8,550 Hernosand and 700 Kotka.

Paper Stock

Importations of papermaking rags into the United States are running a little behind the receipts of last year, judging from figures covering the first five months of this year. U. S. Department of Commerce statistics put the imports during the first five months of 1929 at a total of 170,666,008 pounds, valued at $3,405,395, compared with 171,584,838 pounds of a declared value of $3,207,212 in the same period of 1928. Imports in May last were 43,643,859 pounds, valued at $935,310, contrasted with 37,609,289 pounds of a value of $695,620 in the same month a year ago. Imports of waste bagging and waste paper in May amounted to 12,485,535 pounds, against 11,589,590 pounds in the preceding month, while imports of old rope and miscellaneous paper stock in May totaled 12,725,894 pounds, compared with 10,594,233 pounds in April last.

Arrivals of papermaking materials in July were fairly large, according to receipts through the port of New York last month. Rag imports appeared to be normal or better, and some sizable lots of old rope and bagging also were received. Imports of all kinds of paper stock excepting wood pulp at the port of New York during July, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—E. J. Keller Co., 143 bls.; Brown Bros. & Co., 571 bls. and 2,004 coils; Victor Galaup, Inc., 105 bls. and 50 rolls; Irving Trust Co., 283 coils and 42 bls.; International Purchasing Co., 368 coils and 3 bls.; William Steck & Co., 48 coils; J. C. Van Itallie, 43 coils; Harry Miller, 56 bls.; Chase National Bank, 67 bls.; W. Schall & Co., 78 rolls and 168 bls.; Equitable Trust Co., 17 bls.; A. E. Rittwagen, 430 coils and 39 bls.; United Fruit Co., 3 bls.; E. Butterworth & Co., 35 coils; Bank of the Manhattan Co., 44 coils; Order, 73 coils and 69 bls.

Old Bagging—Castle & Overton, 194 bls.; W. Schall & Co., 173 bls.; Overton & Co., 398 bls.; R. F. Downing & Co., 47 bls.; U. S. Lines, 61 bls.; Bank of New York & Trust Co., 181 bls.; National City Bank, 192 bls.; Guaranty Trust Co., 74 bls.; Katzenstein & Keene, 669 bls.; A. W. Fenton, Inc., 161 bls.; Brown Bros. & Co., 146 bls.; Darmstadt, Scott & Courtney, 50 bls.; S. Birkenstein & Sons, 122 bls.; E. J. Keller Co., 193 bls.; Trust Co. of America, 46 bls.; Order, 481 bls.

Rags—William Steck & Co., 36 bls.; E. Butterworth & Co., 403 bls.; Paul Berlowitz, 285 bls.; C. M. Fors, 18 bls.; Victor Galaup, Inc., 1,761 bls.; Daniel M. Hicks, Inc., 29 bls.; Castle & Overton, 1,127 bls.; J. Cohen & Sons, 253 bls.; Ernst Mayer, 29 bls.; J. Reiss & Co., 33 bls.; E. J. Keller Co., 1,370 bls.; Darmstadt, Scott & Courtney, 368 bls.; Katzenstein & Keene, 698 bls.; Salomon Bros. & Co., 67 bls.; W. Lowenthal & Co., 22 bls.; S. Birkenstein & Sons, 311 bls.; Daniel L. Murphy, Inc., 276 bls.; Robert Blank, 150 bls.; Alexander H. Searle, Inc., 601 bls.; David Galloway, Inc., 230 bls.; Jaffe Products Co., 38 bls.; Baring Bros. & Co., 5 bls.; C. B. Richard & Co., 495 bls.; T. D. Downing & Co., 8 bls.; C. R. Spence & Co., 43 bls.; Titan Shipping Co., 7 bls.; The Barrett Co., 222 bls.; J. B. Moors & Co., 7 bls.; Gallagher & Ascher, 200 bls.; Brown Bros. & Co., 614 bls.; Beckett Paper Co., 5 bls.; J. W. Elwell, 197 bls.; Milton Snedeker Corp., 36 bls.; American Express Co., 129 bls.; G. W. Sheldon & Co., 57 bls.; A. W. Fenton, Inc., 1,505 bls.; W. Schall & Co., 281 bls.; Overton & Co., 53 bls.; Kidder Peabody Acceptance Corp., 66 bls.; U. S. Lines, 78 bls.; Bank of New York & Trust Co., 52 bls.; Banca Commerciale Italiana Trust Co., 74 bls.; Anglo-South American Trust Co., 16 bls.; First National Bank of Boston, 49 bls.; Bank of the United States, 51 bls.; Chase National Bank, 901 bls.; National City Bank, 211 bls.; Chemical Bank & Trust Co., 263 bls.; Philadelphia National Bank, 403 bls. Fidelity Trust Co., 109 bls.; Equitable Trust Co., 815 bls.; Guaranty Trust Co., 228 bls.; Bank of the Manhattan Co., 147 bls.; French-American Banking Corp., 806 bls.; Manufacturers Trust Co., 85 bls.; Order, 2,898 bls.

Miscellaneous Paper Stock—Darmstadt, Scott & Courtney, 117 bls.; Castle & Overton, 60 bls.; J. Cohen & Sons, 80 bls.; William Steck & Co., 6 bls.; Katzenstein & Keene, 598 bls.; E. J. Keller Co., 173 bls.; E. Butterworth & Co., 408 bls.; Salomon Bros. & Co., 112 bls.; Alexander H. Searle, Inc., 103 bls.; Daniel M. Hicks, Inc., 295 bls.; George W. Millar & Co., 128 bls.; S. Birkenstein & Sons, 106 bls.; Harmon G. Lichtenstein, 38 bls.; Chase National Bank, 191 bls.; Chemical Bank & Trust Co., 21 bls.; Interstate Trust Co., 104 bls.; Guaranty Trust Co., 289 bls.; Bank of the Manhattan Co., 65 bls.; Equitable Trust Co., 1,234 bls.; Anglo-South American Trust Co., 244 bls.; Irving Trust Co., 114 bls.; R. M. Gray, Inc., 106 bls.; Milton Snedeker Corp., 106 bls.; Van Oppen & Co., 102 bls.; Brown Bros. & Co., 388 bls.; W. Schall & Co., 330 bls.; T. D. Downing & Co., 218 bls.; Colgate Palmolive Peet Co., 10 bls.; Order, 1,859 bls.

Paper

Imports of paper into the United States in May reached a total value of $13,909,592, showing an icrease over the importations of a declared value of $12,128,812 in the preceding month, and also a gain over the imports valued at $13,308,182 in the similar month last year, according to official statistics compiled by the U. S. Department of Commerce. Imports during the first five months of this year

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* J. G. Vail, Soluble Silicates in Industry, 290-291 (1928).

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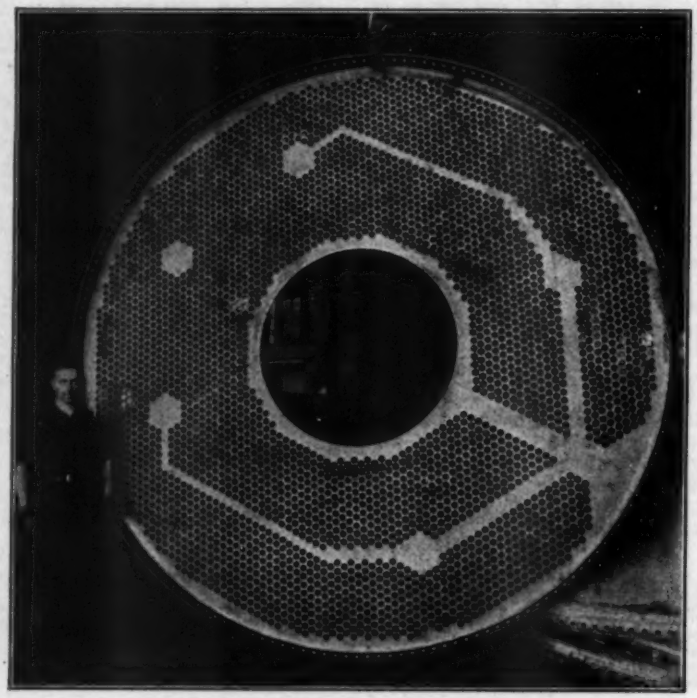

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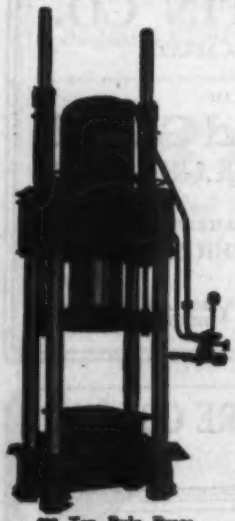

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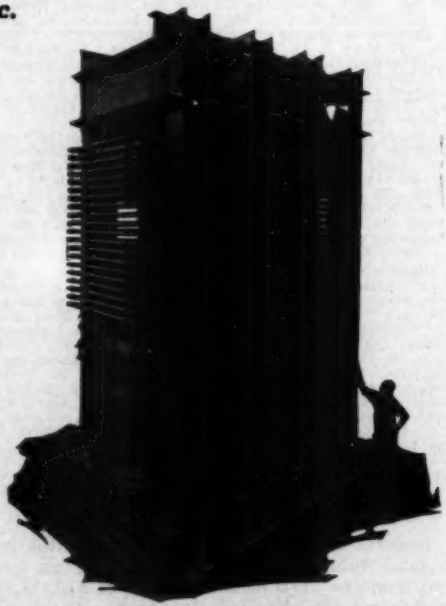

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totaled in value $63,824,953, or about on a par with imports of a value of $63,909,053 in the corresponding period of 1928.

Paper imports during July were up to normal, judging from receipts through the port of New York. Arrivals of all kinds of paper at that port last month, these data being taken from manifests of vessels reaching New York during the month, were as follows:

Printing—Stora Kopparberg Corp., 157 reels from Gothenburg; Journal of Commerce, 130 reels from Stockholm; H. Reeve Angel & Co., 670 bls. from Helsingfors; C. Brunning, 40 cs. from Rotterdam; J. J. Bernitz, 64 bls. from Hamburg; American Express Co., 20 bls. from Havre; Keuffel & Esser Co., 141 reels from Hamburg; Oxford University Press, 23 cs. from Liverpool; Dingelstedt & Co., 20 cs. from Liverpool and 23 cs. Bremen; P. C. Zuhlke, 26 cs. from Bremen and 14 cs. Antwerp; Perkins-Goodwin Co., 907 reels from Hamburg; E. Dietzgen & Co., 261 cs. from Rotterdam and 10 cs. Hamburg; C. Steiner, 64 cs. from Rotterdam; Martin & Bechtold, 24 cs. from Bremen; F. C. Strype, 5 cs. from Rotterdam; Bank of Montreal, 3,305 reels from Corner Brook; P. Puttmann, 4 cs. from Antwerp; W. A. Foster, 39 bls. from Glasgow; Franc Du Tours, 11 cs. from Havre; Hudson Trading Co., 209 rolls from Sundsvall; Order, 2,506 reels from Bremen, 22 rolls Copenhagen, 37 cs. Marseilles and 676 reels Kotka.

Wrapping—C. K. MacAlpine & Co., 81 bls. and 210 reels from Gothenburg; Arkell Safety Bag Co., 587 reels from Gothenburg; Gilbert Paper Co., 172 reels and 72 bls. from Gothenburg; Borregaard Co., 213 bls. and 867 reels from Gothenburg; F. C. Strype, 6 cs. from Antwerp; Birn & Wachenheim, 177 cs. from Antwerp; Gaevert Co. of America, 14 cs. from Antwerp; D. S. Walton & Co., 35 bls. and 31 rolls from Gothenburg; C. Steiner, 15 bls. from Rotterdam; Union Paper & Twine Co., 98 bls. from Gothenburg; Crepe Kraft Co., 53 reels from Gothenburg; Standard Products Corp., 35 rolls and 15 cs. from Antwerp; Atlantic Forwarding Co., 28 cs. from Hamburg; H. Reeve Angel & Co., 7 cs. from Antwerp and 103 rolls Gothenburg; Wilkinson Bros. & Co., 86 rolls and 31 cs. Gothenburg; Chemical Bank & Trust Co., 61 bls. from Gothenburg; A. Johnson, 16 rolls from Gothenburg; Southern Pacific Line, 100 bls. from Genoa; Eastchester Paper & Twine Co., 6 bls. from Hamburg.

Cigarette—P. J. Schweitzer, Inc., 125 cs. from Marseilles and 62 cs. Havre; DeMauduit Paper Corp., 40 cs. from Havre and 874 cs. St. Nazaire; Standard Products Corp., 534 cs. from Havre; American Express Co., 850 cs. from Bordeaux; Equitable Trust Co., 6 cs. from Trieste; American Tobacco Co., 1,350 cs. from Bordeaux; M. Spiegel & Sons, 3 cs. from Bordeaux; International Souvenir Import Corp., 30 cs. from St. Nazaire; British-American Tobacco Co., 278 cs. from Southampton; Ligget & Myers Tobacco Co., 8 cs. from Bordeaux; Heemsoth & Basse, 8 cs. from Bordeaux; Southern Pacific Co., 3 cs. from Havre; Order, 135 cs. from Marseilles.

Writing—Guibont Freres & Co., 28 cs. from Havre; Draeger Shipping Co., 4 cs. from Barcelona; B. Altman & Co., 39 cs. from Southampton and 3 cs. Havre; Taub, Hummel & Schnall, 2 cs. from Southampton and 4 cs. Havre; G. W. Sheldon & Co., 9 cs. from Southampton and 7 cs. Havre; M. J. Corbett & Co., 2 cs. from Southampton; Stern Bros., 3 cs. from Havre and 4 cs. Southampton; Distinctive Writing Paper Co., 4 cs. from Southampton.

Filter—J. Manheimer, 149 bls. from Southampton; A. Giese & Son, 58 bls. from Southampton and 9 cs. Hamburg; H. Reeve Angel & Co., 40 cs. from London and 130 cs. Southampton; C. Sleicher & Scholl Co., 42 bls. from Hamburg; E. Fougera & Co., 127 cs. from Southampton.

Tissue—F. C. Strype, 2 cs. from Genoa and 29 cs. Helsingfors; B. F. Drakenfeld & Co., 2 cs. from Liverpool; Parsons & Whittemore, 4 cs. from Liverpool; Meadows, Wye & Co., 2 cs. from Liverpool; G. W. Sheldon & Co., 8 cs. from London; Atlantic Forwarding Co., 2 cs. from Hamburg; W. J. Byrnes & Co., 5 cs. from Southampton; Schenkers, Inc., 330 cs. from Hamburg; F. B. Vandegrift & Co., 4 cs. from Liverpool; Order, 15 cs. from Genoa.

Drawing—Keuffel & Esser Co., 118 cs. and 62 rolls from Hamburg; Devoe & Raynolds, 5 cs. from London; International Forwarding Co., 2 cs. from London; H. Reeve Angel & Co., 7 cs. from Southampton and 4 cs. London; D. C. Andrews & Co., 14 cs. from Antwerp.

Hanging—A. C. Dodman, Jr., Inc., 12 bls. from Bremen, 16 bls. Southampton, 4 cs. Havre and 14 bls. Liverpool; F. J. Emmerich & Co., 4 bls. from Liverpool and 34 bls. Hamburg; C. A. Haynes & Co., 106 bls. from London and 28 cs. Liverpool; W. H. S. Lloyd & Co., 3 bls. from London; Globe Shipping Co., 7 bls. from Hamburg; National City Bank, 2 bls. from Hamburg; International Mercantile Marine Co., 5 cs. from Southampton; Guaranty Trust Co., 20 cs. from Hamburg; Thomas & Pierson, 2 cs. from Southampton; F. G. Prager & Co., 101 bls. from Antwerp; R. P. Downing & Co., 16 cs. from Southampton; Order, 7 bls. from Bremen.

Photo—Globe Shipping Co., 533 cs. from Bremen; Gevaert Co. of America, 244 cs. from Antwerp; J. H. Schroeder Banking Corp., 25 cs. from Bremen; G. W. Sheldon & Co., 15 cs. from London; P. Puttmann, 47 cs. from Antwerp; J. J. Gavin & Co., 5 cs. from Southampton; P. C. Zuhlke, 68 cs. from Bremen and 59 cs. Antwerp; Order, 38 cs. from Hamburg.

Board—Perkins-Goodwin Co., 378 rolls from Rotterdam; C. H. Powell & Co., 301 reels from Rotterdam; Adrian Vuyck, 327 reels from Rotterdam; Lagerloef Trading Co., 259 reels and 129 bls. from Kotka; Cheramy, Inc., 10 cs. from Havre; Houbigant, Inc., 40 cs. from Havre; American Express Co., 18 cs. from Havre; Almo Trading & Import Co., 4 cs. from Rotterdam; Wilkinson Bros. & Co., 22 rolls from Gothenburg; C. K. MacAlpine & Co., 5 bls. from Gothenburg; Order, 106 bls. from Hamburg.

Miscellaneous—Japan Paper Co., 6 cs. from Marseilles, 66 cs. Genoa, 4 cs. Southampton, 8 cs. London, 5 cs. Gothenburg, 3 cs. Antwerp and 3 cs. Havre; Whiting-Patterson Co., 43 cs. from Southampton and 3 cs. Bremen; E. M. Sergeant Co., 14 cs. from Gothenburg; J. Beckhardt & Co., 94 cs. from Rotterdam and 29

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ESPECIALLY recommended for dyeing chemical pulps in the beater.—Possesses excellent fastness to light.—Does not foam, and leaves a nearly colorless "white-water".

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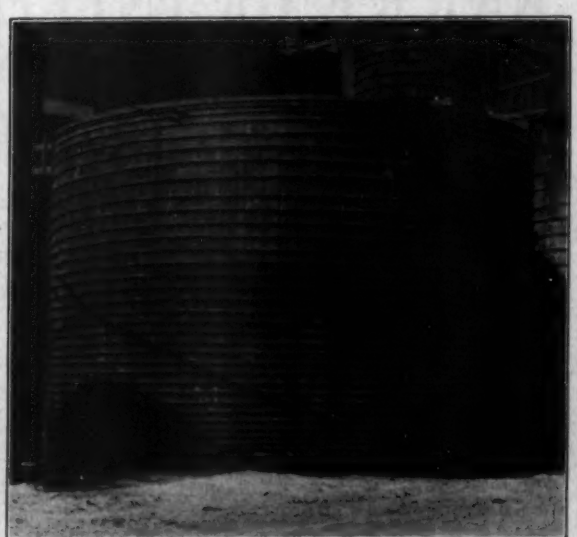

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Fine Faced "English Woven" Felts for Fine Papers in Two, Three, Four, Five and Six Ply 60 Inches to 288 Inches in Width.

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cs. Havre; Meadows, Wye & Co., 4 cs. from Rotterdam; R. F. Downing & Co., 2 cs. from Havre; Keller-Dorian Paper Co., 42 cs. from Havre; C. H. Forsman, 3 cs. from Havre; Stern Bros., 17 cs. from Havre; B. F. Drakenfeld & Co., 79 cs. from Liverpool; Yardley & Co., 4 cs. from London; Central Hanover Bank & Trust Co., 40 cs. from Hamburg; W. J. Byrnes & Co., 13 cs. from Havre; S. Stern Stiner & Co., 16 cs. from Havre and 3 bls. Hamburg; D. C. Andrews & Co., 10 cs. from Rotterdam and 2 cs. Hamburg; W. L. Haas, 10 cs. from Rotterdam; Hurley-Johnson Corp., 8 bls. from Iverpool; Tiffany & Co., 2 cs. from Southampton; H. D. Catty & Co., 2 cs. from Antwerp; Eleto Co., 7 cs. from Antwerp and 2 cs. Havre; C. H. Boulin, 28 cs. from Havre; Bendix Paper Co., 7 cs. from Hamburg; Maritime Inspecting & Forwarding Co., 12 cs. from Havre; Tamm & Co., 5 cs. from Bremen; P. Murray Hill, Inc., 6 cs. from Hamburg and 12 cs. Bremen; S. Gilbert, 39 cs. from Bremen; F. L. Kraemer & Co., 15 cs. from Bremen, 23 cs. Southampton and 3 cs. London; Hensel, Bruckman & Lorbacher, 25 cs. from Bremen; Central Union Trust Co., 137 cs. from Hamburg; W. Bersch, 15 cs. from Hamburg; Kupfer Bros. Co., 22 cs. from Bremen; H. Reeve Angel & Co., 4 cs. from Yokohama; E. Dietzgen & Co., 11 cs. from Hamburg; P. H. Petry & Co., 5 cs. from Hamburg; Rohner, Gehrig & Co., 4 cs. from Hamburg; Universal Carloading & Distributing Co., 8 cs. from Bremen; J. E. Anderson, 5 cs. from Gothenburg; Borden & Riley Paper Co., 5 cs. from Antwerp; Neypaco Paper Co., 11 cs. from Havre; Parsons & Whittemore, 2 cs. from Liverpool; Louis Dejonge Co., 15 cs. from Hamburg; Irving Trust Co., 21 cs. from Havre; Vernon Bros., 51 cs. from Glasgow; National Consumers Paper Corp., 8 cs. from Liverpool; Globe Shipping Co., 123 cs. from Rotterdam and 61 cs. Bremen; Titan Shipping Co., 2 cs. from Havre; Independent Forwarding Co., 2 cs. from Bremen; International Forwarding Co., 35 cs. from Antwerp; Interocean Forwarding Co., 2 pkgs. from Havre; American Express Co., 148 cs. from Havre, 173 cs. Hamburg and 2 cs. Southampton; Gallagher & Ascher, 52 cs. from Bremen; Merchants Dispatch, 13 cs. from Rotterdam; Hudson Forwarding & Shipping Co., 7 cs. from Havre.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 39126—Gummed paper, 1 inch wide, 500 rolls of 800 feet. Santiago, Chile, Purchase desired.

No. 39182—Mulch paper, for farm use. Melbourne, Australia. Purchase desired.

No. 39183—Mulch paper, asphalt saturated and coated. Nantes, France. Purchase and agency desired.

No. 39085—Overissued newspapers. Tientsin, China. Purchase and agency desired.

No. 39089—Roofing paper. Havana, Cuba. Agency desired.

No. 39129—Paper spoons, forks, etc. Madrid, Spain. Agency desired.

No. 39268—Bags of kraft paper, and moth-proof garment bags. Bridgetown, Barbados. Agency and Purchase desired.

No. 39269—Cardboard and paper of all kinds. Rio de Janeiro, Brazil. Agency desired.

No. 39239—Newspapers and magazines, overissued. Bombay, India. Purchase desired.

No. 39250—Wall and insulating boards. Montreal, Canada. Agency desired.

No. 39266—Wrappers for food, transparent. Prague, Czechoslovakia. Agency and Purchase desired.

No. 39251—Wrapping, newsprint and other papers, and paper bags. Santo Domingo, Dominican Republic. Sole agency desired.

No. 39239—Writing and printing papers. Bombay, India. Purchase and agency desired.

No. 39376—Paper box manufacturing machinery. Sydney, Australia. Purchase and agency desired.

No. 39429—Newspapers, overissued. Mukden, Manchuria. Purchase desired.

No. 39339—Caustic soda. Berehovo, Czechoslovakia. Purchase desired.

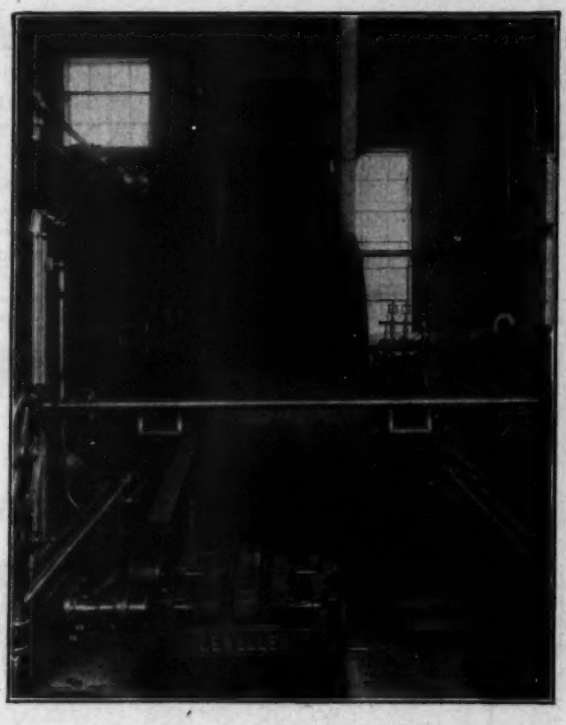
No. 39478—Kraft wrapping paper, in rolls. Bridgetown, Barbados. Agency and purchase desired.

No. 39523—Casein. Hamburg, Germany. Agency desired.

No. 39449—Rosin. Dresden, Germany. Purchase desired.

At a meeting of the Board of Directors of The Republic Rubber Co., Youngstown, Ohio, July 17, O. S. Dollison, Sales Manager, was elected a director and vice president in charge of sales. Mr. Dollison has been prominent in the rubber industry for the past twenty years, and has been active in the direction of Republic affairs since 1922.

PERFECT CONTROL



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The LEWELLEN Transmission is small in size and smaller in price, compared with the machinery it is usually called upon to control. It is not an expense, but a highly profitable investment, wherever variable speed control is of any importance. This is why the LEWELLEN is found today in every branch of industry, boosting production, and cutting costs, by saving waste of time and material. Write us for particulars regarding your own variable speed control problem.

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THE DRAPER FELT

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PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

European Kraft Paper Trust

The Finnish Paper and Timber Journal of June 30 quotes a German financial publication in reference to European manufacturers of kraft paper having formed an export trust for the purpose of fixing standard prices and sales terms. Kraft paper manufacturers in Finland, Sweden, Germany and Czechoslovakia are said to have become parties to the agreement.

In denying the accuracy of the statement attributed to the financial magazine, R. von Frenckell, general manager of the Finish Paper Mills Association, says that the statement apparently refers to an agreement which manufacturers of coarse papers had entered into six months previously. It is noted that this agreement is of no great importance, seeing that the world export of this grade of paper does not exceed 10,000 tons per annum.

The Oldest Papermaking Patent

Dr. Arthur St. Klein, Berlin correspondent of THE PAPER INDUSTRY, is the author of a note in *Wochenblatt für Papierfabrikation* for July 6 on the first papermaking patent that was allowed by the British patent office.

Charles Hildeyard was granted patent No. 147, February 16, 1665, covering "The waye and arte of making blew paper used by sugar-bakers and others". How blue tinted paper was first produced forms one of those old-time yarns pertaining to accidental discoveries. In this case the accident of a housewife in dropping her blueing into the stuff-chest, beater or whatever it was, was the origin of blue paper.

Expansion Program of International Paper and Power Company Nearing Completion

The extensive expansion program commenced by International Paper and Power Company and subsidiaries in 1925 is now practically completed, according to a statement issued by the company on July 10, 1929. Except for paper mills at Dalhousie, New Brunswick, and Mobile, Alabama, now nearing completion, and the proposed New Brunswick and northern Maine mill development, only minor projects remain. The statement reads:

"In the four years which have elapsed, control of New England Power Association has been acquired; twenty hydro-electric plants have been built or purchased; four kraft pulp and paper mills in southern states have been erected or purchased and another will soon be in operation; a newsprint paper mill has been built in Quebec, another in the same province has been enlarged, a third has been acquired in Newfoundland, and a fourth is nearing completion in the Province of New Brunswick.

"The general policy of the Company through this period has been one of developing income-producing power properties and reorganizing paper producing properties for increased efficiency and economy of production, adding new units where necessary and creating a well diversified line of products.

"The Company emerges from this program as a factor of the first rank in several well diversified fields; it is one of the largest owners of hydro-electric properties; it is the world's leader in newsprint manufacture, as well as in the manufacture of kraft paper; it supplies about half the world's requirements of bleached sulphite pulp as a raw material for rayon; and in addition is a substantial factor in many other grades of pulp, paper and paper products."

The National Kraft Paper Manufacturers' Association, of which J. P. Hummel, of the Hummel-Ross Fibre Corp., Hopewell, Va., is president, has sent out cards to firms engaged in the manufacture of krapt pulp and paper announcing the opening of its executive office under the direction of Oliver M. Porter, manager, in the Chanin Building, Suite 3511, 122 East Forty-second street, New York, the telephone number of which is Caledonia 5721. Major Porter wishes it to be known that all members of the kraft paper industry, including both manufacturers and merchants, would be very welcome at these offices.

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GENUINE Alligator Steel Belt Lacing is the strongest flexible joint ever developed. The entire belt end is clinched in the Alligator vise-like grip of steel. Protects belt ends also. Smooth on both sides of the belt. Patented sectional steel rocker hinge pin outlasts any other type of pin. Made in 11 sizes. Long, efficient service in every type of belting. Standardize on it. Sold at wholesale and retail the world over.
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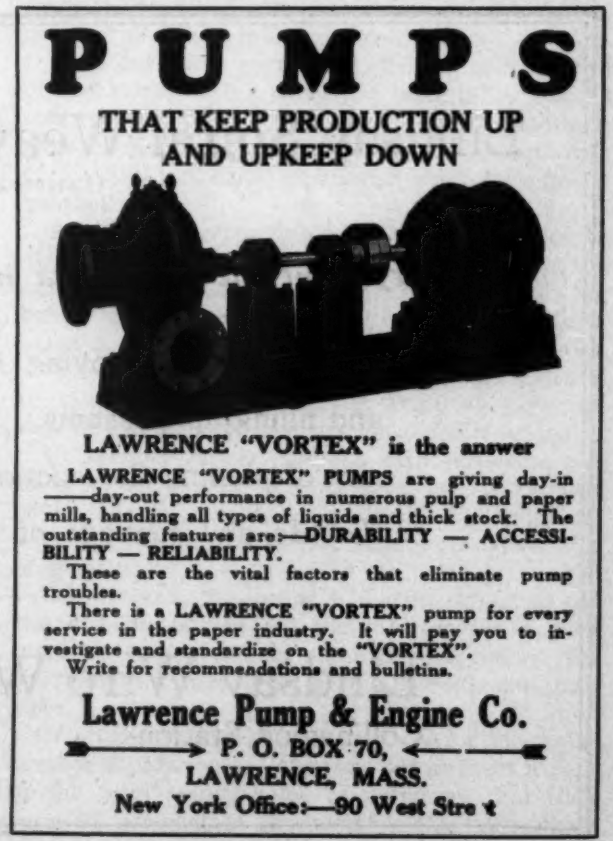
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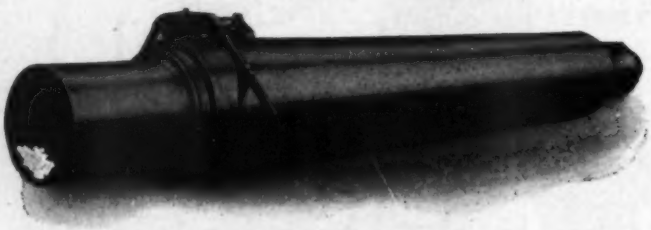

Farrel Indicating Roll Caliper mounted on Farrel 30" x 184" roll

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